Permanent Disability at Private, Self-Insured Firms:
A Study of Earnings Loss, Replacement, and Return to
Work for Workers' Compensation Claimants

Contents

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PREFACE

While significant reforms in 1989 and 1993 improved workers compensation in California, the rules governing permanent disability (PD) benefits remain the most contentious and most difficult to reform. The Commission on Health and Safety and Workers Compensation (CHSWC) is charged under the 1993 workers compensation reform legislation with conducting a continuing examination of the workers compensation system. In response to public encouragement at a fact-finding hearing in 1996, CHSWC decided to undertake a multi-year review of the adequacy, equity, and cost of workers compensation PD benefits. Through a competitive bidding process, the RAND Institute for Civil Justice was selected to provide analyses to support this review.

The CHSWC PD project was designed to result in improvements of the system that are rigorously supported by research, mutually beneficial to employers and labor, and agreeable to the stakeholders of the system. This project identifies the problems of the system, informs the formulation of policy through objective research, and builds consensus about appropriate and feasible policy responses through constant collaboration with stakeholders. In the first phase of this project, CHSWC commissioned RAND to evaluate PD benefits.[1] A focus of this evaluation has been on the long-term earnings losses and other outcomes for workers with PD claims. The first phase examined workers at insured firms. In response to stakeholder input, this document extends those results, examining earnings losses, replacement by workers compensation benefits, and post-injury employment at private, self-insured employers.

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[1] The findings were reported in Peterson, Reville, Stern, and Barth (1997). See also Stern, Peterson, Reville, and Vaiana (1997).

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SUMMARY

In 1996, the California Commission on Health and Safety and Workers Compensation began a five-year comprehensive review of workers compensation permanent partial disability. As part of that review, this report investigates the long-term economic consequences of a disabling injury, the success of return to work,[1] and the adequacy of compensation at *private, self-insured employers* in California.

The analysis in this report was conducted in response to comments from stakeholders on an earlier report (Peterson et al., 1998), which showed that workers injured on the job in 1991 at insured firms in California experienced significant and sustained wage losses as well as low replacement rates over the five years immediately after injury. An advisory committee to the commission argued that the results might not apply to self-insured employers, which are larger and therefore better able to accommodate workers with disabilities. Data on self-insured firms were unavailable for Peterson et al., but a unique data collection effort and new analysis now confirm earlier findings and extends them to private, self-insured firms.

The main findings of this report include the following:

- Permanent partial disability (PPD) claimants at private, self-insured employers from 1991 through 1995 experienced significant earnings losses over the first five years after injury.

- After injury, PPD claimants at self-insured firms were more likely to continue to work, less likely to drop out of the labor force or retire, and if they remained employed were more likely to work at the at-injury employer than their counterparts at insured firms.

- Due to improved return to work, injured workers at self-insured firms experienced a lower proportion of earnings lost than did injured workers at insured firms.

- On average, because workers at self-insured firms have higher wages, they are more likely to have weekly wages that exceed the maximum temporary disability indemnity payment. Consequently, workers compensation benefits replaced a smaller fraction of losses at self-insured firms (48 percent) than at insured firms (53 percent).

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[1] *Return to work* is a term used by participants in the workers compensation system to describe various aspects of employment following injury. It usually refers to the amount of time between the injury and the first return to work, which is sometimes called the return-to-work rate. More generally, it refers to both return-to-work rates for injured employees, as well as other characteristics of post-injury employment, such as retention, subsequent employment, and other factors. In this report, we intend return to work to imply the more general definition.

- At both insured and self-insured firms, replacement rates were very low for workers with the lowest indemnity claims (those with the least serious injuries). At the self-insured firms, claimants with total indemnity falling below the 20th percentile had 14 percent of their lost earnings replaced by benefits; at insured firms, the replacement rate was 11 percent.

- At both self-insured and insured firms, California workers compensation benefits for many PPD claimants did not meet the commonly applied standard for adequacy, which is to replace two-thirds of pre-tax earnings losses.

- PPD claimants with high pre-injury earnings and high-indemnity claims experienced large dollar losses that were not compensated by benefits.

UNIQUE DATABASE FOR ESTIMATING LOST WAGES FACILITATES NEW FINDINGS

The data for this report were collected with the assistance of the California Self-Insured Plans, the California Self-Insurers Association, and the Commission on Health and Safety and Workers Compensation. These organizations helped researchers assemble claims data from 68 private, self-insured employers. The resulting one-of-a-kind database formed a representative sample of data on claims made from 1991 through 1996, including benefits incurred, benefits paid, and injury dates. The claims records from this database were then linked to quarterly wage data for claimants at every employer in California, which were obtained from a database supplied by the California Employment Development Department (EDD).

For our analysis of PPD claimants at *insured* employers, we used 1989 through 1995 claims data from the database maintained by the Workers Compensation Insurance Ratings Bureau, a private entity responsible for publishing and proposing workers compensation insurance premium rates.[2] These data were also linked to wage data from the EDD. To estimate the wage losses of injured workers, we estimated what they would have earned if they had not been injured. To do this, we examined the earnings of an uninjured control group for each injured worker in our database. The control groups comprised uninjured workers employed by the same firms as the injured workers, and who were earning the same salaries and had the same tenure with their firms. Earnings losses represent the difference between what an injured worker made in

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[2] These are the same data used in Peterson et al. (1998). The later accident years (1993 through 1995) have been updated to reflect claim development up to four years after injury.

the five years after injury compared with what members of the control group made on average during the same time period.

FIRMS THAT SELF-INSURE ARE LARGER AND PAY HIGHER SALARIES THAN INSURED FIRMS

Instead of purchasing insurance for workers compensation, firms may insure themselves for the costs of indemnity, medical compensation, and vocational rehabilitation following workplace injuries. This option is available to firms that receive consent from the state. To qualify, firms must meet stringent financial requirements that demonstrate their ability to bear the full cost of workers compensation claims.

Consequently, it is difficult for small, private firms to qualify as self-insured employers. Of the more than 100,000 employers in California, only about 900 are self-insured. Approximately one-half of these employers are private firms and the other half are public agencies. Most of the largest employers and almost all of the public employers in California are self-insured. Private, self-insured firms generate 18 percent of all workers compensation claims and 21 percent of all claims made by private employers in California.

The most significant differences between self-insured and insured firms are their size and wage rates. Self-insured firms have close to 17 times more employees than insured firms, and the pre-injury earnings of claimants at self-insured firms are 50 percent higher. Figure S-1 shows the 1993 pre-injury wage distribution of California claimants at self-insured and insured firms by quarterly earnings. The most common quarterly earnings for employees at self-insured firms is close to $7,000; at insured firms, the most typical quarterly earnings are slightly more than $2,500.

Differences in pre-injury earnings mean that more workers injured at self-insured firms face significantly lower income while receiving temporary disability benefits than injured workers at insured firms. The vertical line in Figure S-1 indicates a quarterly income of $6,552; above this income level, temporary disability payments no longer provide two-thirds replacement of lost wages. Whereas only 30 percent of the workers at insured firms have earnings above this amount, 61 percent of workers at self-insured firms have earnings exceeding that amount. Since 1993, the indemnity cap has increased to $9,552 per quarter. Even so, 39 percent of 1993 self-insured claimants exceeded this raised cap.

SIGNIFICANT PROPORTIONAL EARNINGS LOSSES AT SELF-INSURED FIRMS

We estimated workers total lost earnings after injury, including wages lost while out of work. The estimates revealed significant and sustained earnings losses for PPD claimants at self-

insured firms. For example, the average earnings of workers injured in 1993 were 21 percent lower in the first quarter after injury in comparison to the control group of uninjured workers whose earnings were equal to the injured workers prior to injury. Five years after injury, the average earnings of injured workers were still significantly lower than those of comparison workers. Over the five years after injury, claimants lost a total of 23 percent of both pre- and post-tax earnings with pre-tax dollar losses averaging $39,500. (See Table S-1.)
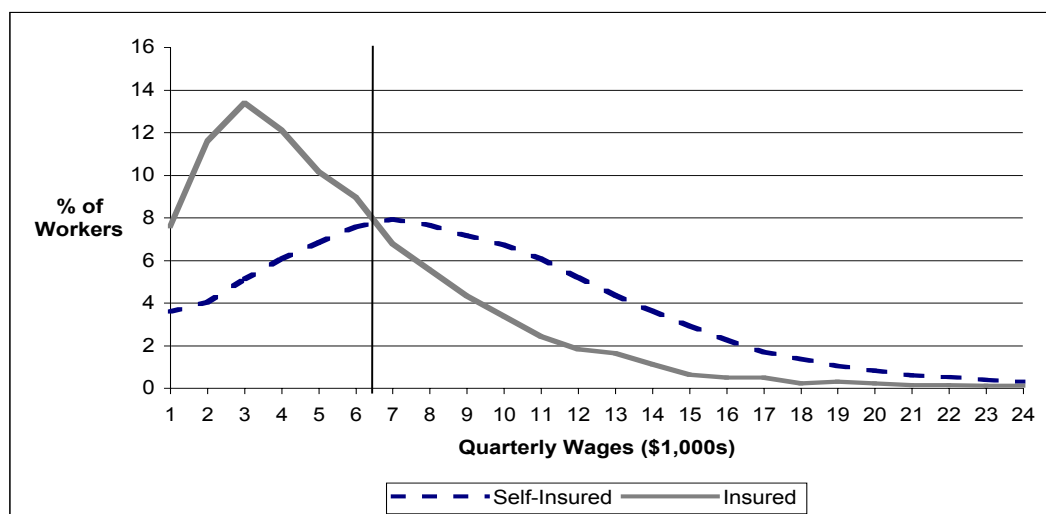
Figure S-1 Wage Distribution, Insured vs. Self-Insured Firms, 1993

Five years after injury, the proportion of these lost wages replaced by benefits was 48 percent before tax and 64 percent after tax.[3] After-tax replacement rates are larger because workers compensation indemnity benefits are not taxed. As the years pass, total earnings losses, potential earnings, and total benefits increase. As a result, ten years after their injuries, workers injured at self-insured employers had average total dollar losses of $53,300 after tax and collected benefits that replaced 46 percent of these lost wages.

DOLLAR LOSSES LARGER AND REPLACEMENT RATES SMALLER FOR SELF-INSURED CLAIMANTS

A comparison of injured workers at self-insured firms with injured workers at insured firms shows that the two groups experienced a similar pattern of wage loss after injury even

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[3] The replacement rate of lost earnings the fraction of losses replaced by workers compensation benefits includes temporary disability, permanent partial disability, and vocational rehabilitation indemnity benefits (but not the cost of training), and the full amounts of compromise and release settlements.

though workers at insured firms had a larger proportional drop in earnings. Figure S-2 compares the earnings impact of a disabling injury at both types of firms in 1993. The figure shows earnings as a proportion of comparison workers earnings.

Table S-1

Earnings Loss and Replacement Rates, Self-Insured and Insured Firms, 1993 Injuries

	5-Year Before-Tax Earnings	5-Year After-Tax Earnings
Self-Insured Firms		
Earnings Losses	$ 39,500	$ 29,800
Potential Uninjured Earnings	$168,900	$129,100
Total Indemnity	$ 19,100	$ 19,100
Proportional Loss	23%	23%
Replacement Rate	48%	64%
Insured Firms		
Earnings Losses	$ 33,200	$25,600
Potential Uninjured Earnings	$103,500	$80,700
Total Indemnity	$ 17,600	$17,600
Proportional Loss	32%	32%
Replacement Rate	53%	69%

Before being injured, injured workers earned the same as their comparison workers that is, 100 percent of earnings. After injury, injured workers earnings from both types of firms fell sharply. Workers at self-insured firms experienced a smaller initial earnings decline than workers at insured firms. However, over time, the differences in proportional earnings loss lessened with each quarter, and five years after the injury the two groups both earned approximately 80 percent of what their comparison workers earned.

Total earnings losses and replacement rates, however, tell a different story. Five years after injury, total losses for injured workers at self-insured firms ($39,500) are *higher* than those at insured firms ($33,200). See Table S-1 for a summary of earnings losses and replacement rates for injured workers at both self-insured and insured firms.

Although lower proportional losses for those at self-insured firms should imply that replacement rates would also be higher, in fact they are not because workers at self-insured employers have higher earnings. The benefits at self-insured firms are comparable to those at insured firms, and workers at both types of firms are subject to the same maximum indemnity caps. Because total losses are higher at self-insured firms, the replacement rates are lower. In comparison with the five-year replacement rate of 48 percent at self-insured firms, the replacement rate is 53 percent at insured firms. Lower replacement rates for workers at self-insured firms persist when the estimates are extended to 10 years beyond injury.
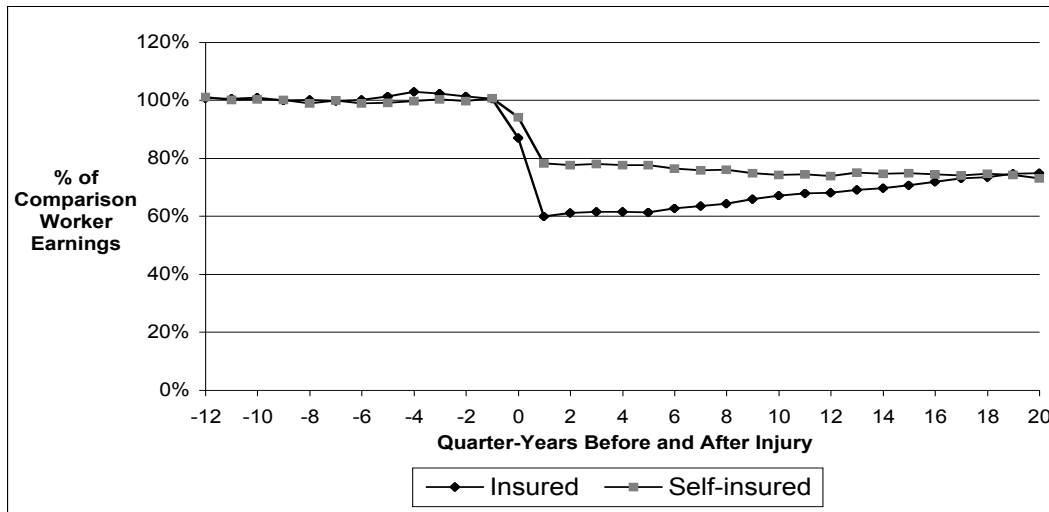
Figure S-2 Injured Workers Earnings as a Percentage of Comparison Workers Earnings, 1993 Injuries, Self-Insured and Insured Firms

RETURN TO WORK BETTER AT SELF-INSURED FIRMS

In the first three months after injury, injured workers at self-insured firms spend 4 percent more time out of work than their uninjured co-workers. This percentage increases steadily over time and eventually reaches 14 percent five years after injury. By comparison, injured workers at insured firms spend 19 percent more time out of work than their uninjured co-workers during the first three months after injury.

Figure S-3 summarizes the post-injury employment of both self-insured and insured PPD claimants. The figure reports the percentage of workers injured in 1993 who were employed in the quarter relative to the percentage of comparison workers employed in the quarter for the three years before and five years after injury.

During the three years before injury, injured workers were as likely to be working as their comparison workers. After injury, injured workers were less likely to be employed for both groups, but workers injured at insured firms experienced more time out of work over the first three to four years. Workers at self-insured firms returned to work sooner and were less likely to experience subsequent time out of work, at least initially. As time passed, however, differences between the two groups disappeared. After five years, the proportion of injured workers who were working was nearly the same at both self-insured and insured firms.

Time out of work in the immediate aftermath of an injury explains much of the difference in proportional wage losses between self-insured and insured firms (see Figure S-2). That is, as shown in Figure S-3, because workers at insured firms spent more time out of work, their proportional wage losses were higher.
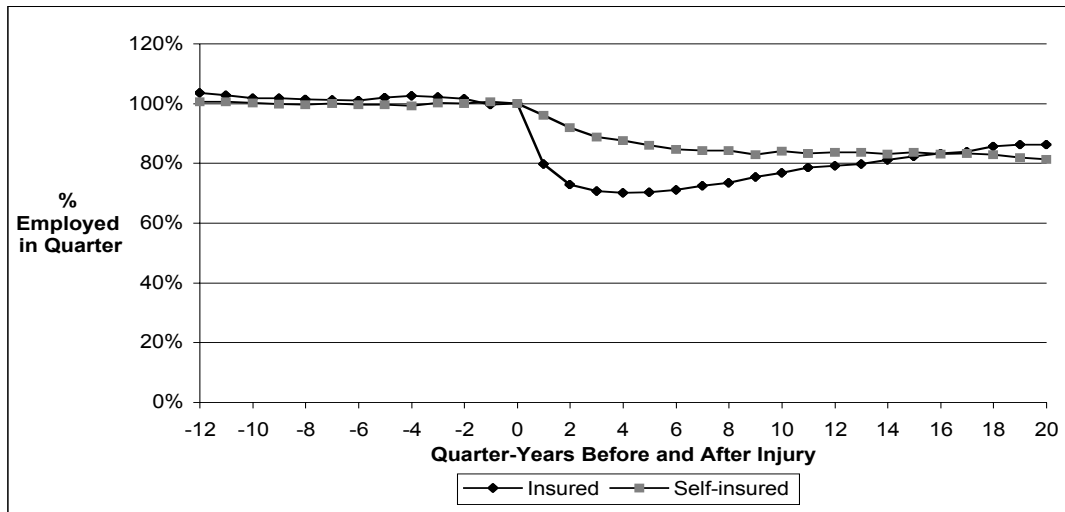
Figure S-3 Percentage of Injured Workers on the Job at Self-Insured and Insured Firms Relative to Comparison Workers, 1993 Injuries

Because self-insured employers bear the full cost of a workplace injury, these employers have incentives to return an injured worker to the workplace as soon as possible. An employee who returns to work more quickly reduces the amount of temporary disability benefits an employer pays. Consequently, self-insured firms are more likely to have return-to-work programs, and because they are bigger they are better able to offer modified work or hold a position open during a worker s recovery period.

Workers at self-insured firms may also be more motivated to return to work because their higher wages make them more likely to exceed the indemnity maximum; that is, they may return to work sooner to curtail wage losses. Therefore, while employers seek to reduce time out of work after injury in order to reduce their workers compensation costs, these results show that both employers and injured workers ultimately benefit from improved return to work.

The proportion of workers who drop out of the labor force after injury and do not return to work (over the observed period) is initially much lower at self-insured firms than at insured firms. At the self-insured firms, only 2 percent of injured workers have permanently dropped out within nine months after injury, less than half the percentage at insured firms. As with other initial distinctions between self-insured and insured firms, these differences lessen over time. At self-insured firms, the dropout rate increases as the years pass, and it stays unchanged at the insured firms. Two and a half years after injury, the fraction of employees who have dropped out of the workforce is relatively equal at both types of firms. This finding suggests that if workers are going to drop out for injury-related reasons, they do so immediately after injury at insured firms. At self-insured firms, injured workers are more likely to give returning to work a try.

One difference between self-insured and insured firms does result in lasting differences in outcomes for injured workers. If they are working after their injuries, self-insured PPD claimants are likely to continue to work at the at-injury employer, in which case these employees see their wages quickly recover to the level of comparison workers.

RESULTS SUGGEST PROBLEMS WITH ADEQUACY AND EQUITY OF BENEFITS

One of the key issues motivating workers compensation research and policy debate in the state of California is whether the current system provides adequate and equitable benefits to injured workers. The questions surrounding this issue and their answers are complex, primarily because adequacy and equity do not have formal definitions. That is, no statutory language exists to clarify whether adequacy means that benefits should provide all injured workers with a designated percentage of their losses or with an income to maintain their pre-injury standard of living.

The term equity has a similarly ambiguous meaning. For example, equity may be perceived as requiring that all losses should be treated equally by providing benefits in proportion to losses. For example, two-thirds is the traditional replacement rate for temporary disability benefits. Alternatively, the most serious injuries could be compensated the most, with benefits provided in increasing proportions according to the severity of injury. A third possibility is that benefits may function as a safety net, so that a higher proportion of losses are replaced for individuals with lower pre-injury income.

Given their complexity, we investigated these issues using multiple indicators. The chapters that follow provide comparative estimates of proportional wage loss, replacement rates of workers compensation benefits, and remaining uncompensated wage losses according to both pre-injury earnings and injury severity.

Table S-2 highlights differences in proportional wage loss and replacement rates of workers compensation benefits at both self-insured and insured firms according to pre-injury wages. The big difference in the earnings of workers at self-insured and insured firms can be observed in the salary levels represented by earnings quartiles; these figures complement the earnings differences between workers at the two groups of firms previously shown in Figure S-1. The earnings differences are especially apparent in the five-year potential earnings of uninjured workers (see Column 4 in Table S-1), which show that higher-paid workers have more to lose. In comparison with potential earnings, indemnity payments through Year 5 are similar (see Column 5 in Table S-1), although lower-paid workers at insured firms receive lower indemnity payments on average than other injured workers (perhaps because so many remain below the indemnity caps). The four right-hand columns of Table S-2 point out differences in the impact of a

workplace injury on proportional wage loss and replacement rates. In general, as earnings increase, both proportional wage losses and replacement rates (before and after taxes) decrease. When analyzed according to pre-injury earnings and replacement rates, the injured workers who fare best in the California system are the lowest-paid workers at insured firms. Those with the lowest replacement rates are the highest-paid workers at both self-insured and insured firms.

Table S-2

Earnings Losses and Replacement by Pre-Injury Earnings Percentile, Self-Insured and Insured Employers, 1993 Injuries

Pre-Injury Earnings Percentile (within group)	Annual Salary ($)	5-Year Earnings Losses ($)	5-Year Potential Uninjured Earnings ($)	Indemnity Paid by Year 5 ($)	5-Year Proportional Loss (%)	Replacement Rates (%)		
						5-Year Pre-Tax	5-Year After-Tax	10-Year After-Tax
Self-Insured Firms								
0—25	Up to 23,000	31,170	81,136	18,121	38	58	74	49
25—50	23,000—34,000	36,715	130,828	20,348	28	55	73	53
50—75	34,000—48,000	39,751	188,722	19,312	21	49	65	47
75—100	48,000+	50,481	274,841	18,522	18	37	50	39
Insured Firms								
0—25	Up to 13,000	16,278	49,473	14,703	33	90	112	84
25—50	13,000—21,000	24,818	71,098	16,801	35	68	80	61
50—75	21,000—32,000	38,382	109,466	19,019	35	50	60	48
75—100	32,000+	53,146	183,745	19,889	29	37	46	41

Another approach to assessing the adequacy and equity of benefits is to view them according to the severity of injury. Figure S-4 summarizes the wage loss remaining after benefits are paid (that is, uncompensated wage loss) for insured and self-insured claims above and below the median indemnity payment ($13,595) and by the pre-injury earnings quartiles, which are shown in Table S-1. Figure S-4 shows that in three of the four groups (low-indemnity insured, and high-indemnity self-insured and insured workers), uncompensated losses increase with earnings. These losses increase significantly for those with high-indemnity claims, and losses are greatest for those with high-indemnity claims and higher earnings.

The exception to the pattern shown in Figure S-4 is found in the low-indemnity claims at the self-insured firms, which show no particular relationship between uncompensated losses and pre-injury earnings quartiles. The outcomes for this particular group of claimants exemplify the return-to-work successes of the self-insured firms. Generally, workers in this group and particularly those in the two highest earnings quartiles are most likely to recover from their injuries and are the easiest to accommodate; therefore, at self-insured firms, they are most likely to return to work successfully.

In addition, workers at insured firms with high-indemnity claims who are in the lowest earnings quartile are compensated over 100 percent. For these workers, pre-injury earnings are likely to fall below the benefit caps. As a result, despite losing close to half of their earnings, the indemnity paid over five years after injury exceeds their losses.
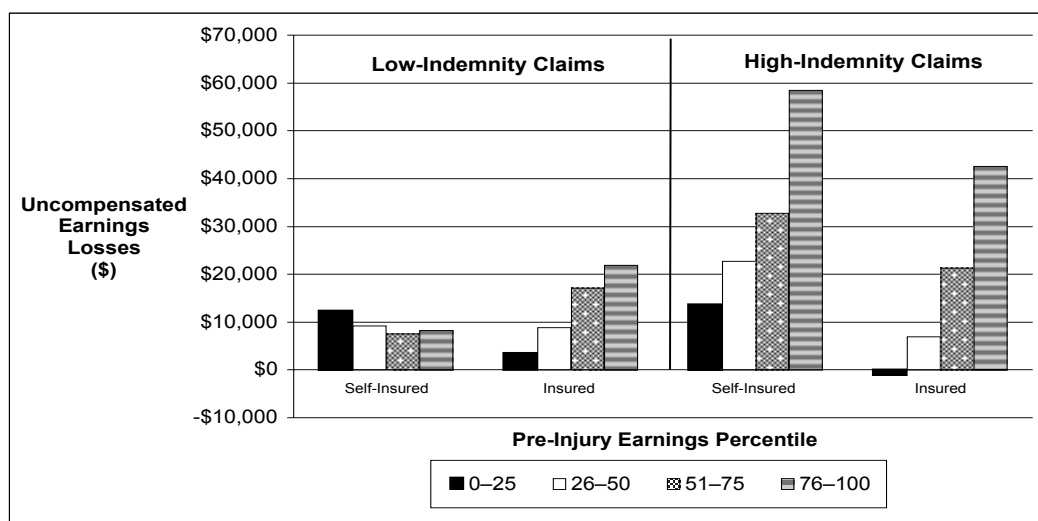
Figure S-4 Uncompensated Wage Losses by Quartile of Pre-Injury Pre-Tax Earnings for High-Rated and Low-Rated Claims, 1993 Injuries After Five Years

The uncompensated losses of those with high pre-injury earnings and high-indemnity claims at both self-insured and insured firms are striking. At the self-insured firms, the top quartile of pre-injury earnings has uncompensated losses of $58,500 over the five-year period after injury. The comparable amount at insured firms is $43,000. These two groups reveal the combined weaknesses of the workers compensation system. Because they are the more seriously disabled claimants, they are harder to accommodate despite the return-to-work programs at self-insured firms. Additionally, as high-earnings claimants, they are subject to indemnity caps and receive benefits no greater than any other earnings category despite considerably higher dollar losses. Outcomes in these groups seem least adequate when measured either by replacement rate or uncompensated losses.

Many of the differences observed in proportional losses between claimants at insured and self-insured firms can be accounted for by the differences in claimants pre-injury earnings and by the size of the self-insured and insured firms. The far-left bar in Figure S-5 shows that, on average, insured claimants have proportional wage losses that are 13 percentage points higher than those of self-insured claimants. But when the estimates are adjusted for industry, the insured claimants losses are only 8 percent higher (middle bar). When the estimates are adjusted simultaneously for all the distinctive features of self-insured firms industry, pre-injury earnings, and number of employees only a 5 percent difference remains between the proportional wage

losses of workers at insured and self-insured firms (far-right bar). Therefore, strong conclusions about the advantages to workers of workers compensation at self-insured firms are unwarranted.
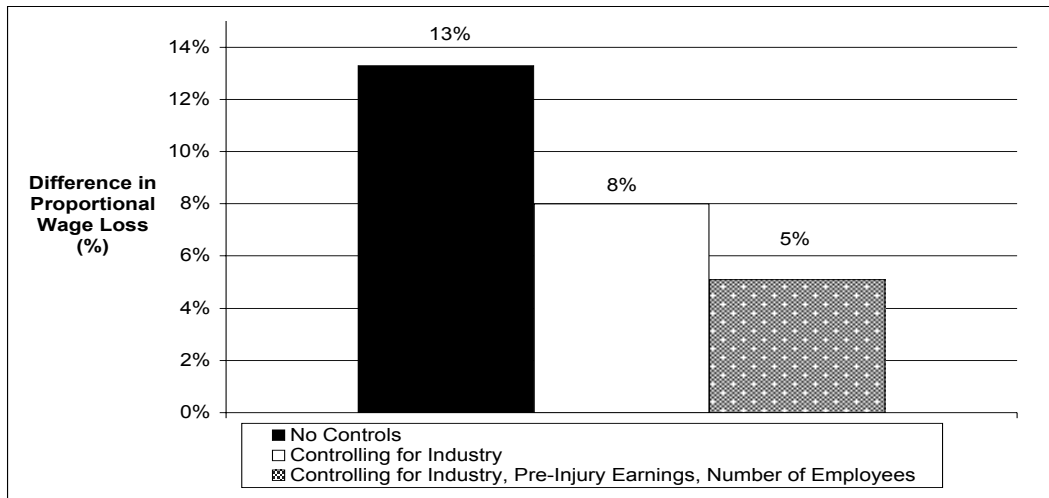
Figure S-5 Difference Between Self-Insured and Insured Proportional Wage Loss Before and After Controlling for Other Claim Characteristics, 1993 Through 1995 Claims

These results on the adequacy of compensation do not lend themselves to simple solutions. For instance, one solution could be to raise benefits for low-rated claims. Although low replacement rates are observed among low-indemnity claims, they do not necessarily imply that uncompensated losses are especially high in this group. Using alternative measures of adequacy, high earnings, low-indemnity claims at self-insured firms are well compensated. Another solution is to increase compensation for the high-rated claims. However, once again, by any reasonable measure, the high-indemnity claims with the lowest pre-injury earnings at insured firms are well compensated, with replacement rates in excess of 100 percent five years after injury. A third potential solution, raising caps to target high-earnings claimants, would raise benefits for one group of workers already among the workers compensation successes those with low indemnity and high earnings at self-insured firms.

The lack of simple solutions should not stand in the way of policymakers addressing clear issues of adequacy (such as high uncompensated losses among high-indemnity, high-wage workers) and equity (such as low replacement rates among the lowest-rated claims, particularly at the insured firms). But while fine-tuning the compensation structure may be appropriate in the short run, the lack of obvious policy levers for this purpose suggests that more fundamental solutions need to be considered. In particular, further efforts are required to improve return to work, particularly among smaller firms. In addition, disability ratings, which determine most of the differences in compensation, need to be revised to more accurately target individuals with greater losses. Alternative approaches to setting benefits should be considered, such as increasing

benefits for workers who do not receive an offer of return to work. In addition, if the resulting approach to setting compensation were more consistent, the amount of litigation may be reduced and confidence in the system restored.

ACKNOWLEDGMENTS

INTRODUCTION

Permanent partial disability (PPD) from a workplace injury is perhaps the most vexing issue facing workers compensation policy in California. Employers widely regard the rules, process, and dispute resolution associated with the payment of PPD benefits as both expensive and a source of much contention. In addition, most participants in the workers compensation system consider the benefits to be inadequate and inequitably distributed.

As part of its assistance to the ongoing oversight and evaluation of permanent partial disability in California by the California Commission on Health and Safety and Workers Compensation (CHSWC), RAND published a study estimating the wage losses of workers with permanent disability claims (Peterson et al., 1998). *Wage loss* was defined as the difference between what an injured worker actually earned for several years following the injury and the worker s potential uninjured earnings, that is, what that worker would have earned had the injury not occurred.

The RAND study, using the only claims-level data on PPD claims available at the time, estimated wage losses for PPD claimants from a sample of claimants injured on the job. At the time of injury, these claimants were working for employers that had purchased insurance for workers compensation. The sample represents approximately two-thirds of the PPD claims in California.

The study revealed that over the five-year period following injury in 1991, the wage losses of PPD claimants injured at insured employers totaled almost 40 percent of their potential earnings. The study also estimated *replacement rates* for these workers, defined as the fraction of losses replaced by workers compensation benefits. The estimated replacement rates averaged less than 50 percent.

An obstacle to policy response to the Peterson et al. (1998) results was that many stakeholders were concerned that the results of the wage-loss study could not be applied in general to all employers in California, and in particular were not relevant to self-insured employers.[1] Self-insured employers, who account for approximately one-third of all claims and 21 percent of claims at private employers, include most of the largest employers in the state. Anecdotally, at least, self-insured employers are regarded as the most innovative and aggressive

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[1] Another objection was that the results were driven by the recession in California in the early 1990s, which was just beginning when the workers in the study were injured. The results shown in this report indicate that earnings losses declined after 1991. This issue is analyzed in more detail in Reville and Schoeni (2001).

employers in their approach to occupational safety and health and in their company policies encouraging workers to return to work.

The Permanent Disability Advisory Committee, a group of stakeholders formed by CHSWC, recommended that CHSWC ask RAND to extend the wage-loss study to include the experience of workers injured at self-insured employers. This report, which focuses on private, self-insured employers, is partly in response to that request. A report on public employers is forthcoming.[2]

Employers that self-insure for workers compensation have different incentives regarding PPD than employers that purchase insurance, partly because self-insured firms face risks more directly rather than pooling them with other firms. These incentives may lead self-insured employers to respond to workplace injuries in ways that reduce workers losses (this is explored more fully later in this report). In addition, only certain firms, such as those of a particular size, have the ability to self-insure; therefore, size and other factors may also lead self-insured employers to respond differently to workplace injuries than would employers who purchase insurance.

In this report, we estimate the earnings losses and wage replacement of PPD claimants at self-insured firms, and compare that data with the experiences of PPD claimants at insured firms. The report also empirically explores the explanations for observed differences between insured and self-insured firms. In particular, we focus on the effect of the number of employees at the injured claimant s firm and the impact of the pre-injury earnings of the claimant.

Until the introduction of the California Division of Workers Compensation Information System in 2000, which is still ongoing, California did not require self-insured employers to report detailed information on individual claims to the state. As a result, RAND, with assistance from the California Self-Insured Plans (SIP), the California Self-Insurers Association, and CHSWC, conducted an unprecedented data collection effort and was able to obtain administrative claims data directly from self-insured employers. The data provided by the employers were then linked to claimants earnings data maintained by the California Employment Development Department (EDD). The resulting private employer-state linked administrative database provides the model for research on the role employer characteristics play in outcomes for disabled workers.

The results of the study indicate that, as with claimants at insured employers, permanent disability claimants at private, self-insured employers experience significant and sustained earnings losses. In addition, workers compensation benefits at self-insured employers on average

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[2] References to self-insured employers in this report, unless otherwise stated, are to private, self-insured employers.

provide wage replacement over the five years after injury that is equal to or lower than wage replacement at insured employers. However, the results also confirm that when measured several different ways, return-to-work experiences of employees injured at private, self-insured employers are better than those of employees injured at insured employers.

The seeming contradiction of better return-to-work experiences combined with lower replacement rates is explained by the higher average earnings of workers at self-insured firms. We find that workers with higher pre-injury earnings have losses that are larger in absolute terms but that constitute a smaller proportion of their pre-injury earnings. Due to benefit caps, total indemnity does not increase in proportion with pre-injury earnings (or increase at all for most workers). This situation leads to low replacement rates for workers with high pre-injury earnings at both insured and self-insured firms. However, because, before their injuries, a greater number of workers earn high wages at self-insured firms, more workers on average at these firms have lower replacement rates.

In Chapter 1 of this report, we provide some background on self-insurance requirements and statistics on self-insurance in California, and discuss the implications of return to work and longer-term outcomes for PPD claimants. Chapter 2 describes the methods for measuring earnings loss and defines the various outcomes measures used for the evaluation of adequacy and equity. Chapter 3 describes the construction of the private employer-state linked administrative database used in the analysis. In Chapters 4 through 7, we report the results of the analyses, and in Chapter 8 we summarize and discuss the implications of the results on the adequacy and equity of workers compensation indemnity for PPD claimants in California.

CHAPTER 1

**SELF-INSURANCE IN CALIFORNIA AND IMPLICATIONS FOR RETURN TO WORK
AND REPLACEMENT OF LOST EARNINGS**

In this chapter, we describe the requirements for workers compensation self-insurance in California and compare the characteristics of self-insured firms and insured firms. We also discuss what these characteristics imply for return to work and for the long-term losses of workers with permanent disability claims at self-insured employers. We also discuss the impact of these characteristics on replacement of lost earnings.

Most employers in California purchase workers compensation insurance from private insurance carriers to cover the costs of indemnity payments, medical expenses, and vocational rehabilitation provided to workers injured on the job. The insurance company agrees to pay the claims to the injured workers and charges the employer a premium based on the firm s expected workers compensation losses.

Large firms with many employees are *experience rated,* meaning that their premiums are adjusted according to the number and size of claims made against them in previous years. Smaller firms are imperfectly experience rated or not experience rated at all, which means that their expected premiums are based on the loss experience of their respective industries.[1]

Employers that do not purchase workers compensation insurance must self-insure.[2] Self-insured employers must cover the costs of compensation for injury out of their firms revenue and assets. In this sense, they are perfectly experience rated.

In California, employers that wish to self-insure must obtain a certificate of consent to self-insure from the Department of Industrial Relations (DIR). The DIR will consent when the employer demonstrates the ability to self-insure and to pay any compensation that may become

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[1] The *degree of experience rating* (e) is the weight applied to the firm s own experience (in terms of the number and cost of injuries in previous years) in the calculation of its premium. It is a variable that ranges from 0 to 1. The weight applied to the industry s experience (as opposed to the firm s experience) is equal to $1-e$. If $e=1$, the firm is said to be perfectly experience rated, which means that only the firm s experience matters. If $e = 0$, then the firm is not experience rated at all, which means that only the industry experience matters. The larger the firm, the closer e is to 1. According to the Workers Compensation Insurance Rating Bureau, approximately 20 percent of firms are experience rated ($e > 0$), accounting for 80 percent of the insured workforce. In California, no insured firms are 100 percent (that is, perfectly) experience rated.

[2] Few employers are exempt from this rule, but the exempt include casual employment and domestic employment, some volunteer organizations, and independent contractors. Federal employees, railroad employees, and harbor and longshore workers are covered under other federal workers compensation systems. State agencies are legally uninsured, although functionally self-insured.

due to his employees. [3] The regulations require the employer to have a net worth of $5,000,000 and average annual revenue of $500,000 over the past five years.[4]

Private employers must also provide an estimate of future liability, and maintain a deposit with the DIR totaling 125 percent of the self-insurer s estimated expected future liability for compensation and 10 percent of estimated future legal and administrative costs.[5] This deposit may be no less than $220,000.[6] These conditions are certain to discourage small firms from self-insuring, which is as it should be because small firms would be unlikely to reliably pay all compensation due to their claimants.[7]

Of the more than 100,000 employers in California, only approximately 900 are self-insured. Between 1991 and 1996 there were 898 self-insured firms, of which 466 were private firms and 432 were public agencies.[8] Despite the small number of self-insured firms, most of the largest employers in California, and almost all of the public employers, are self-insured.

Figure 1-1 shows the portion of total payroll, workers compensation claims, and employment at self-insured firms and insured firms in California from 1993 through 1996. Self-insured firms account for about 35 percent of claims. Private, self-insured firms account for about 17 percent of employment, and public self-insured agencies account for approximately 12 percent of employment.[9] Self-insured firms also account for a higher number of workers compensation claims and payroll dollars per employee than insured firms.

In short, private, self-insured firms differ from insured firms in three critical ways:

1. They bear the actual cost of their workers compensation claims, whereas insured firms (particularly smaller ones) pay the expected cost for a firm within their industry.

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[3] California Labor Code, Section 3700(b).

[4] 8 Cal. Code of Regulations, 15203(b).

[5] California Labor Code, 3701.

[6] California Labor Code, 3700.5.

[7] It is possible for multiple employers to self-insure as a group. Although many school districts have done this, no private employers in California have done so.

[8] The data on self-insured firms in this chapter are from the Self-Insured Plans (SIP), a division of the Department of Industrial Relations. The SIP defines a firm as the *master certificate holders,* which includes the parent company and all subsidiaries that are covered by the self-insurance policy. When characterizing firms in California as a whole, the data are from the Employment Development Department (EDD). These data are based upon Unemployment Insurance (UI) reporting units. Many large master certificate holders include multiple UI reporting units. According to the EDD, there were 937,164 UI reporting units in 1996. Most of these will have no workers compensation claims.

[9] The total employment data were collected from the EDD. Employment at insured firms is calculated by subtracting the employment at self-insured firms from total employment. A small number of illegally uninsured employers would be included as insured in this calculation.

2. They are considerably larger.

3. The workers at self-insured firms are paid higher wages than workers at insured firms.

Each of these three characteristics may have an impact on the earnings losses of workers at self-insured firms.
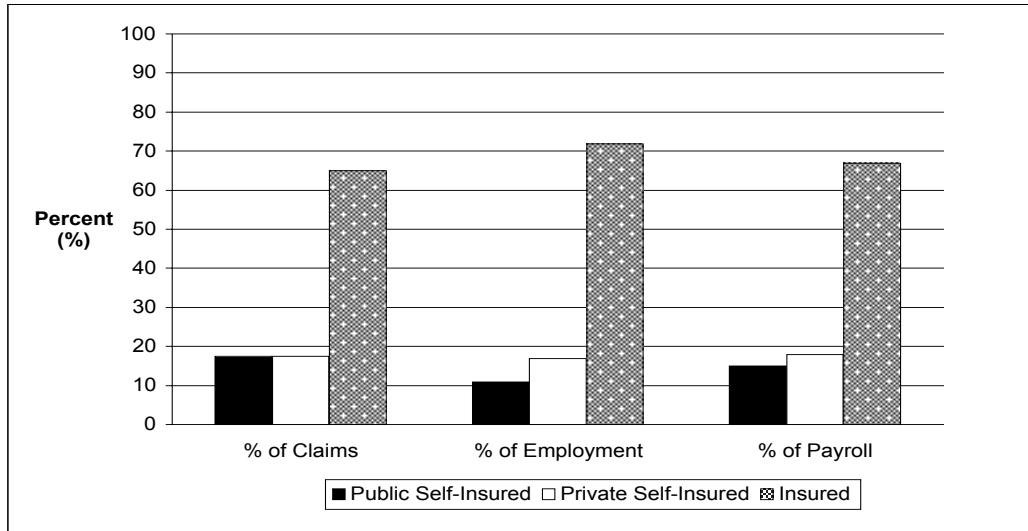
Figure 1-1 Claims, Employment, and Payroll by Firm Type, 1993 Through 1996

An employee s successful return to work can be measured along several dimensions. Frequently, better return to work refers to a shorter duration of temporary disability benefits. In this report, the term *better return to work* is also defined by whether the return to work is at the same job or the same employer, and whether the injured employee, after first returning to work, is able to continue participating successfully in the labor force. This last aspect is particularly important for workers with permanent disabilities.

Table 1-1 shows the 1993 average pre-injury earnings and number of employees working at employers where injuries have occurred, using a sample of claims at insured firms and a sample at self-insured firms in California. These data (which are described in greater detail in Chapter 3) are from very large samples drawn from a broad range of employers.

The self-insured claims are reported unweighted and weighted to represent the population of self-insured claims; therefore, the weighted estimates can be considered representative.[10] The insured claims represent approximately two-thirds of a 20 percent random sample of insured claims, and the bias in the two-thirds sample is toward higher earnings and larger employers. Despite this bias, average employment at firms in the sample of self-insured claims is 17 times

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[10] The weighting approach is described in Chapter 4 and in detail in Appendix A.

higher than employment at firms in the sample of insured claims. The pre-injury earnings of claimants at self-insured firms are 50 percent higher.

Table 1-1

Average Number of Employees and Quarterly Earnings, Self-Insured and Insured Firms in California, 1993

	Self-Insured		Insured
	Unweighted	Weighted	
Number of employees	17,698	16,336	1,061
Pre-injury quarterly earnings	$9,217	$8,709	$6,006

Note: Pre-injury quarterly earnings are estimated for injured workers in the quarter immediately prior to the quarter of injury. The number of employees is the average number at the injured workers firm in the three months during the quarter of injury.

If an employer bears the full cost of the injury, as self-insured employers do, the incentive for the employer to reduce temporary disability is greater. If this tendency leads employers to adopt more return-to-work programs, the employee may have less time out of work initially, and may even have less subsequent dislocation. This incentive is discussed in Krueger (1990), who showed that the duration of temporary disability associated with a benefit increase was lower at self-insured firms than at insured firms in Minnesota, which would be consistent with self-insured firms stronger incentives to avoid paying temporary disability benefits, presumably by returning workers to work sooner.[11]

The earnings losses associated with a PPD claim at larger firms may be lower than the losses at smaller firms because larger employers may be better able to offer modified work to disabled employees. For PPD claimants who do not require modified work, larger firms are also more likely to be able to hold a position open for a longer period of time while the worker recovers, or find a new position for the injured worker if the old one has been filled. Allowing the employee to return to the at-injury employer would reduce dislocation associated with the injury, including the loss of tenure and any firm-specific training the worker may have received.

On average, higher paid workers return to work sooner, and therefore we expect lower losses for higher-paid workers. One reason given for the more rapid return to work of higher-paid workers is the increased skill level associated with higher wages (Butler, Johnson, and Baldwin, 1995; Fenn, 1981; Johnson and Ondrich, 1990). Higher-skilled workers typically have more flexibility in their job assignments. They are also less likely to be engaged in physical labor, and therefore less likely to be impaired by a physical disability.

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[11] Although the impact that experience rating on injury rates has on the time to return to work has not been extensively examined in the literature, a larger literature is available on the impact of experience rating on injury rates. See, for example, Boden (1995), Burton and Chelius (1997), and Butler (1994).

Another explanation for the shorter duration between injury and the first return-to-work date of higher-earnings workers is that in most states, including California, temporary disability benefits are paid as a fraction of pre-injury earnings up to a maximum level. For workers above the maximum, the fraction of earnings replaced by temporary indemnity benefits (the temporary disability replacement rate) is lower, providing a greater incentive to return to work.

Research on the impact of the temporary disability replacement rate has shown that higher temporary disability benefits, on average, lead to a longer duration of temporary disability, although the magnitude of the effect differs considerably across studies (for example, see Butler and Worrall, 1985; Fenn, 1981; Galizzi and Boden, 1996; Johnson and Ondrich 1990; Meyer, Viscusi, and Durbin, 1995).

Figure 1-2 shows the distribution of wages for permanent disability claimants in the quarter before injury at insured firms and in our sample of self-insured firms in 1993. The horizontal axis represents quarterly wages in thousands (for example, 4 represents $3,001—$4,000), and the vertical axis represents the percentage of workers at each wage level. For instance, although 13 percent of workers injured at insured firms have quarterly earnings of $3,000, only 5 percent of workers injured at self-insured firms earned that amount. At insured firms, a larger fraction of workers receives lower wages, so the self-insured distribution of quarterly wages is shifted to the right of the distribution for insured employers.

Temporary disability in California in 1993 paid two-thirds of the pre-injury wages up to a maximum of $336 per week. The vertical line in Figure 1-2 that appears at the $6,552 mark represents the level of quarterly earnings above which workers on temporary disability would no longer be receiving two-thirds replacement. Whereas only 30 percent of the workers at insured firms have earnings above this amount, 61 percent of the workers at self-insured firms have earnings above the temporary disability cap. The cap has increased to $490 per week since 1993, but even at this new higher level ($9,555), 39 percent of self-insured claimants in 1993 (and 13 percent of insured claimants) exceeded the cap.

Employers sometimes provide supplemental income replacement benefits (or salary continuance) to temporarily disabled workers. This practice is often mandated among public employers.[12] While empirical evidence on this practice is not currently available, anecdotal evidence suggests that it is more common among self-insured employers. Typically, there is no cap on this benefit, but it is limited to one year or less. Depending upon how much of the previous earnings are replaced by the salary continuance benefit, salary continuance would

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[12] For instance, California Labor Code Section 4850 requires that police officers and firefighters must be paid 100 percent of the pre-injury wage for up to one year while temporarily disabled.

mitigate or reverse the predicted effect of the workers compensation temporary disability replacement rate on return to work at self-insured firms.
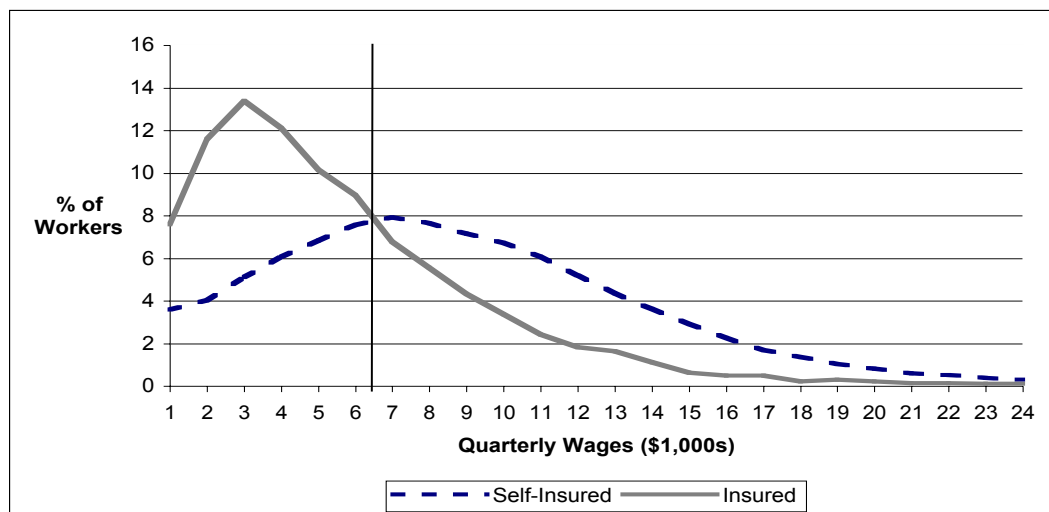
Figure 1-2 Wage Distribution, Insured vs. Self-Insured Firms, 1993

We have reviewed several characteristics of self-insured firms that are expected to increase return to work, including the impact of a perfect experience rating on an employer s incentive to offer return-to-work programs, the ability (due to the employer s size) to offer modified work and to hold a position available for a temporarily disabled worker, and the greater likelihood that their workers (due to their relatively high skill level) will return to work sooner if injured. The cap on benefits may increase return to work, but salary continuance may have the opposite effect. We expect that increased return to work will reduce losses in the short run. Unless workers return to work sooner than is medically advisable, it should also reduce losses in the long run.

We are interested not only in the losses of PPD claimants, but also in the *replacement rate* (the fraction of these losses that are replaced by workers compensation benefits). A simple examination of the temporary disability caps suggests that for workers above the cap, the replacement rate will be lower. However, earlier we suggested that because of salary continuance payments, replacement rates at self-insured employers may not, in fact, be lower.

Over the longer term, it becomes even more difficult to predict the replacement rate consequences. For permanent disability claimants, the labor market ramifications are not limited to time out of work while on temporary disability (Butler, Johnson, and Baldwin, 1995; Peterson et al., 1998; Krause et al., 1999). For instance, their time out of work may continue after their temporary disability benefits have been exhausted, they may have to move to a different

employer and accept a lower wage, or they may have recurring problems over the coming years due to their injuries.

Self-insured employers may have practices that improve all of these subsequent labor market outcomes, thereby minimizing losses and increasing the replacement rate. Nevertheless, in order to improve replacement rates relative to insured firms, practices that encourage improved return to work at self-insured employers, and the advantage self-insured employers have due to their larger size and higher employee earnings, must overcome the disadvantages of the temporary total disability (TTD) cap and lower pre-injury earnings caps on other benefits paid to PPD claimants.

Temporary disability benefits are only a fraction of total benefits received by PPD claimants. These benefits also include permanent partial disability and vocational rehabilitation maintenance allowance (VRMA). VRMA has a cap of $246 per week. In 1993, PPD had a cap of $140 or $148 per week, depending upon the disability rating received. As a result, total indemnity benefits are less related to income levels than temporary disability benefits alone.

Figure 1-3 shows the total indemnity benefits incurred at self-insured employers in 1993 for workers with a range of pre-injury quarterly earnings.[13] The average total indemnity for a worker with quarterly earnings of $3,000 to $4,000 was $22,848. This amount will replace a year and a half of earnings lost after injury. Workers with pre-injury quarterly earnings of $8,000 to $9,000 received $23,324, replacing two-thirds of a year s earnings while out of work. Workers with pre-injury quarterly earnings of $14,000 received total indemnity of $23,110, replacing less than a half-year of earnings.

Biddle (1998a, 1998b) showed that the return-to-work experiences of injured workers were better at self-insured firms. In an analysis similar to the one employed in this report, Biddle (1998a) showed that for workers compensation claimants in Washington state, employees at self-insured firms had, on average, shorter durations of time off work following injury than did workers at fund-insured firms.[14]

Biddle also showed that workers injured at self-insured firms have higher rates of post-injury employment over the first few years after injury, although the difference in the rates declines with time. While for most claims (that is, non-PPD claims), the differences between self-insured and insured firms could be explained by demographic and employer characteristics, PPD claims did not fit this pattern. In addition, Biddle (1998b) showed that, on average, workers

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[13] The incurred benefits data are observed in 1998. For 1993 claims, these data are at five years of maturity, and therefore likely to be a closed claim, at which point incurred data are equal to paid data.

[14] Washington state has a State Fund, and although it permits firms to self-insure, it does not allow private insurers.

injured at self-insured firms have lower replacement rates than workers injured at fund-insured firms.
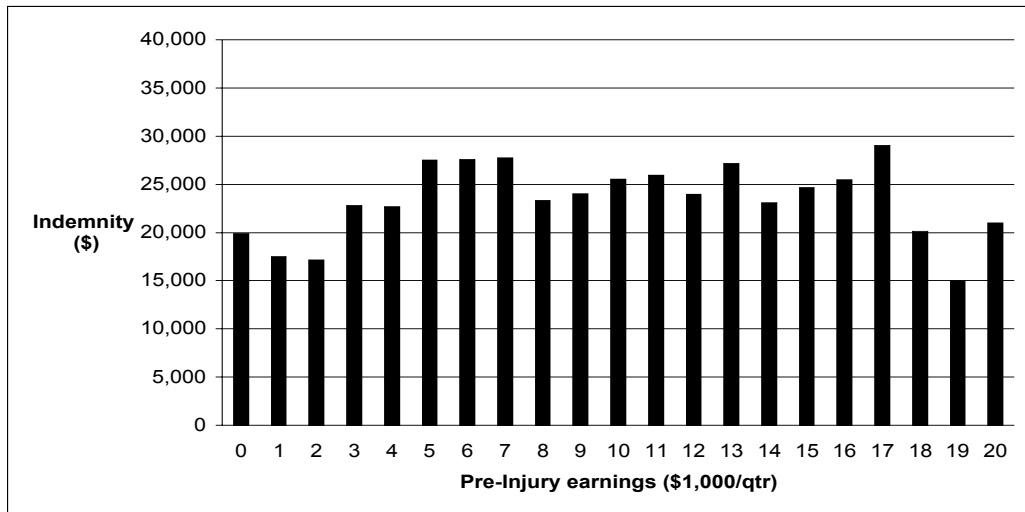
Figure 1-3 Total Indemnity Including Permanent Partial Disability, Vocational Rehabilitation Maintenance Allowance, and Temporary Total Disability by Pre-Injury Quarterly Earnings, Self-Insured Employers, 1993

CHAPTER 2

MEASURING EARNINGS LOSSES AND REPLACEMENT RATES

The goal of this analysis is to measure the adequacy and equity of workers compensation benefits for workers with permanent disability claims. In order to accurately measure adequacy, the benefits received must be compared with some estimate of earnings losses from a permanently disabling workplace injury. These losses can be thought of as twofold: the lost earnings while an injured worker is out of work and receiving temporary disability benefits, and the additional losses associated with the permanent residual impairment that qualifies the worker for permanent disability benefits.

Our efforts in measuring permanent losses are motivated by the stated purpose of the workers compensation permanent disability benefit in California: It is compensation for the diminished ability of such injured employee to compete in an open labor market. [1] We assume that this diminished ability may result in lower earnings due to both increased time out of work after the injury and lower wages. We therefore estimate the total lost earnings after injury and compare the lost earnings to the benefits received.

To help illustrate our approach to estimating losses, Figure 2-1 presents hypothetical losses from a permanently disabling workplace injury. The dotted line represents potential uninjured earnings or the earnings the worker would have received if the injury had not occurred. This line moves upward with time to represent the increased earnings associated with increasing experience in the labor market or increasing tenure at the employer. The solid line represents the observed earnings of the injured worker. At the time of injury, the worker receives no earnings for some time while recovering from the injury. This is the period during which temporary disability benefits are received.

At some point, the worker returns to work, perhaps in some modified capacity. In the example in Figure 2-1, the worker returns at a wage that is lower than what she received prior to injury. We then observe her wages increasing over time and converging toward the wages she would have received had she not been injured. However, in this example, we do not observe full wage recovery, and at the end of the observed period, the worker makes more than she made prior to injury, but not as much as she would have made if she had not been injured.

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[1] California Labor Code, 4660.
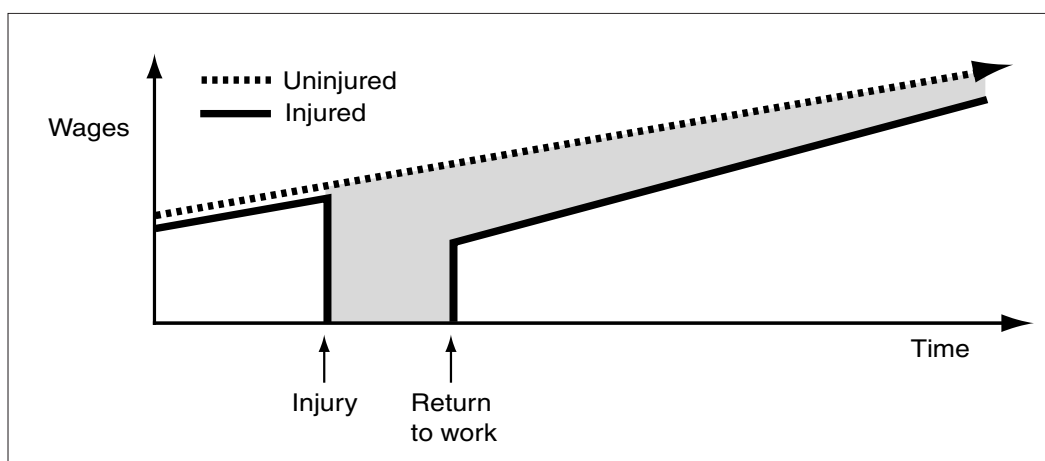
Figure 2-1 Hypothetical Effect on Earnings After a Workplace Injury

The shaded area in the figure represents the total lost earnings over the period after the injury. Estimating the size of this area and determining what fraction is replaced by workers compensation benefits are the goals of this analysis.

Whereas wages received while the claimant is injured are readily observable, as represented by the solid line in Figure 2-1, the challenge in estimating earnings losses lies in estimating the uninjured earnings, which are represented by the dotted line. At an administrative level, workers compensation programs must also estimate uninjured earnings when setting benefits, and typically use the pre-injury earnings for this purpose.

The pre-injury wage is not a satisfactory proxy, however, particularly when estimating the long-term consequences of permanent disabilities. First, without the injury, the worker may have experienced wage growth over time, which the pre-injury earnings will not measure. Figure 2-1 illustrates the fact that while the injured worker soon exceeds pre-injury earnings, her earnings nevertheless fall below what she would have made had the injury never occurred. Second, if the injury had not occurred, it is possible that the injured worker would have been unemployed or exited the workforce for various reasons. It cannot be assumed that the injured worker would have earned the equivalent of the pre-injury earnings in every post-injury earnings period.

Instead of using pre-injury earnings, we estimate uninjured earnings in the post-injury period using the earnings of a comparison (control) group. This approach draws its inspiration from training program evaluation literature (Dehejia and Wahba, 1996; Heckman and Hotz, 1989; Holland, 1986; Lalonde, 1986). The control group consists of workers who were similar to the injured workers with respect to demographic and economic characteristics, but who did not experience a workplace injury during the time period under examination.

For the comparison group measured against workers injured at self-insured employers, we selected 25 workers at the same firm who had earnings that were closest to the injured worker s over the year prior to injury. From among the 25, we selected the five with the closest earnings and also with the same tenure as the injured worker.[2] The estimates from insured employers use the same comparison group described in Peterson et al. (1998): up to 10 workers at the same firm with similar earnings in the year prior to injury but without matching tenure.[3]

We evaluated match quality by examining the difference between the earnings of comparison and injured workers during the two to five years prior to injury (this check is illustrated in Chapter 3). We were not able to attain the insured firm match quality for the self-insured firm matches when we employed the same approach used for the insured firms. We therefore added the additional tenure match for the self-insured firms, and were then able to obtain comparable match quality for both samples.[4]

In each quarter after injury, we calculated the difference between the injured worker s earnings and the average earnings of the worker s comparison group. This step gave us the estimate of earnings loss in that quarter. For five-year earnings losses for a particular individual, we summed the earnings losses in the quarter of injury and 20 quarters thereafter, as shown in the following equation.

Formally, let y_t^I represent the injured worker s earnings (where I denotes injured and the subscript t denotes time from the injury). Let y_t^U represent the comparison worker s earnings (where U denotes uninjured). We estimated y_t^U using the average earnings of the n comparison workers for that individual injured worker.[5] For any individual, the undiscounted earnings loss between the time of injury, which we denoted as $t = 0$, and some future date, T, is shown in Equation 2-1.

Equation 2-1

$$\text{earnings loss} = \sum_{t=0}^{T} (y_t^U - y_t^I)$$

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[2] We defined tenure in three categories: less than one year, one to two years, and more than two years.

[3] Also see the data appendix in Reville (1999).

[4] We also found that adding the tenure match for the insured firms reduced sample size without improving match quality (see Chapter 4 for more information).

[5] For the self-insured, $n = 1$ to 5 (see Appendix A). For the insured, $n = 1$ to 10 (see Peterson et al. [1998] or Reville [1999]).

To produce a single earnings loss estimate for the sample, we averaged the quantity in Equation 2-1 across all injured workers.

In many cases we were interested in estimating proportional earnings losses, or that fraction of potential uninjured earnings over a period of time that an injured worker loses. Normalizing earnings losses by what the individual would have made facilitates comparison over time when average earnings may be growing. It also allows comparison across firms that have different average earnings, such as self-insured and insured firms. Proportional earnings losses are estimated as earnings losses divided by the total earnings received by the comparison group, as shown in Equation 2-2.

Equation 2-2

$$\text{proportional earnings loss} = \frac{\sum_{t=0}^{T}(y_t^U - y_t^I)}{\sum_{t=0}^{T} y_t^U}$$

We also estimated replacement rates of lost earnings, or the fraction of losses replaced by workers compensation benefits. The benefits included in this calculation are temporary disability, permanent partial disability, and vocational rehabilitation maintenance allowance.[6] We used incurred benefit amounts and included the full amount of compromise and release settlements in the calculation of benefits.[7]

Because we observed only the full amount of benefits paid or incurred on a claim, but based the estimated losses on a particular time period that may be shorter than the time period over which benefits are paid, we adjusted the benefits to reflect the same time period during which the losses were calculated. See Appendix A for further details on the estimates of benefits paid.

Let b_t denote the benefits paid to an individual in period t; the replacement rate is then defined, as shown in Equation 2-3.

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[6] Salary continuance, which is taxable, is typically reported to EDD as wages and therefore is included in the estimates as reduced wage loss.

[7] We also only include benefits received in the first PPD claim. Whereas multiple claims for temporary total disability are relatively common (see, for instance, Gotz and Liu, 1999), multiple PPD claims are less common (approximately 7 percent of the individuals in our database had more than one PPD claim in different quarters).

Equation 2-3

$$\text{replacement rate} \; = \; \frac{\displaystyle\sum_{t=0}^{T} b_t}{\displaystyle\sum_{t=0}^{T} (y_t^U - y_t^I)}$$

Because workers compensation benefits are untaxed and earnings are taxed, we also report a simulated after-tax estimate of the replacement rate. This estimate is based on an estimate of family earnings given individual earnings and calculated using the Census Bureau s Current Population Survey. Taxes are calculated using estimates of average tax rates, including federal income taxes and social insurance (Medicare and Social Security), drawn from a report by the Congressional Budget Office (Congressional Budget Office, 1998), and California income taxes drawn from a report by the Citizens for Tax Justice (Ettlinger et al., 1996). See Appendix A for more details on the calculation of after-tax replacement rates.

As in Peterson et al. (1998), Berkowitz and Burton (1987), and California Workers Compensation Institute (1984), we use two-thirds wage replacement as the standard for adequacy of workers compensation benefits. This choice is based upon an extension of the statutory goal for temporary disability benefits and permanent total disability benefits, where the legislative intent is most apparent. We note, however, that it is possible that policymakers intended for workers with higher pre-injury earnings to have a lower wage replacement rate, given the existence of caps for both temporary disability and permanent total disability.

The replacement rate, defined in Equation 2-3, provides a measure of adequacy, but when we compare injuries of varying severity to evaluate equity, reporting only the replacement rate may obscure considerable differences in *uncompensated wage losses*, or total losses after benefits. Formally, we define uncompensated wage loss, as shown in Equation 2-4.

Equation 2-4

$$\text{uncompensated wage loss} \; = \; \sum_{t=0}^{T} \left(y_t^u - (y_t^I + b_t) \right)$$

For example, suppose a worker with a minor injury experiences losses of $90 and receives $30 in compensation, while another worker loses $90,000 and receives $60,000 in compensation. The first worker has a one-third replacement rate while the second has a two-thirds replacement rate. However, the first worker has uncompensated losses of $60 while the second

has uncompensated losses of $30,000. We do not know of a standard to apply to evaluate uncompensated earnings losses, but we believe that policymakers will benefit from knowing both the replacement rates and uncompensated losses when considering a policy response to our findings.

CHAPTER 3

DATA

In California, no reporting requirement exists for self-insured employers that would have provided the data necessary to conduct this study. For this reason, data on self-insured claims were excluded from Peterson et al. (1998). For the study described in this report, RAND undertook an unprecedented effort to collect essential data from self-insured employers in California. This work was accomplished with assistance from the California Self-Insured Plans (the self-insured employers regulator), the California Self-Insurers Association (the employers lobbying group), and the Commission on Health and Safety and Workers Compensation.

The data collected from self-insured employers were then connected to wage data from the State of California to create a one-of-a-kind database of proprietary employer data linked to state administrative data. In this chapter, we describe the self-insured data collection effort and administrative data link. (More information on the self-insured data can be found in Appendix A.) This chapter also briefly describes the data on claims at insured firms in California, which are described in greater detail in Peterson et al. (1998) and Reville (1999).

SELF-INSURED DATA

In response to a request from CHSWC asking for estimated earnings losses at self-insured employers in California, RAND contacted a sample of 150 private, self-insured firms (out of a total of 466) and 150 public self-insured firms (out of a total of 432) and requested data on all indemnity claims from 1991 through 1996. The sample was based on the number of claims at the employer; therefore, the result was a representative sample of claims data from self-insured employers (rather than just a sample of self-insured firms), and the sample was stratified by employer size to increase the probability of selection for small self-insured employers.[1]

Specifically, we requested data on benefit amounts paid and incurred, injury dates, and individual identifiers to facilitate linking to earnings data maintained by the State of California EDD. Because we were concerned that requesting numerous data elements would lead to a lower response rate, we requested additional data that could be provided optionally, such as disability ratings, settlement method, and litigation indicators.

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[1] In addition, the sample was stratified to oversample employers that had not changed third-party administrators (TPAs) because we were concerned that older data would not be available from TPAs who had not continuously serviced the employer.

The initial letter from RAND describing our request for data was sent to the sampled employers in May 1998. Accompanying this letter were other letters from the California Self-Insured Plans, the California Self-Insurers Association, and the Commission on Health and Safety and Workers Compensation encouraging the employers participation. A follow-up letter was sent in July 1998.

We received our data from the self-insured firms from June through August 1998, with most of the data coming in during June and July. By June 15, we had received data from 74 employers, by July 1 from 107 employers, and by July 15 from 143 employers. In several cases, problems were immediately identified by RAND when the data arrived, and new files were sent by the employers or third-party administrators (TPAs). By the end of August, we had received data from 167 employers, including 79 private employers. During this period, a RAND staff member fielded calls every day from employers and TPAs with questions, logged the incoming data, and organized the files on a secure computer for processing by the programmer.

Of the 79 data files from private, self-insured employers, 68 were included in the final sample. The remaining 11 were eliminated for various reasons including inability to identify PPD claims, inability to construct total indemnity, and lack of identifiers needed to link to EDD wage data. The 68 firms with data represent 15 percent of self-insured, private employers, and 30 percent of indemnity claims at self-insured employers. Table 3-1 reports the final response rate broken down by industry using the Standard Industrial Classification (SIC) scheme, company size, and employee payroll.

The table shows that although the sample includes representation from every major industry category, the response rates differ considerably across industries. In particular, public utilities (communication, power, and water) were much more likely to respond, and transportation firms (which consist of primarily trucking companies) were less likely to respond.

Table 3-1 also shows a nonlinear relationship between firm size and the probability of response, although the largest firms were most likely to provide data, which led to some over-sampling of larger firms. However, because smaller firms were more likely to be contacted, the net effect on firm size in the sample of self-insured claims, while nevertheless over-representing larger firms, is not significant (see Table 1-1 in Chapter 1 comparing weighted and unweighted samples).

The table also lists response rate by per-employee payroll dollars. Without conditioning on other variables, no clear relationship exists between per-employee earnings and the probability of response. In an analysis found in Chapter 4, estimates that were weighted to account for nonresponse and sampling are reported for the main results. See Appendix A for further discussion of nonresponse and the construction of weights.

Table 3-1

Response Rate by Industry and Firm Size

Industry	Number Sampled	Response Rate
Agriculture, Forestry, and Fishing (SIC-0)	5	0.400
Mining and Construction (SIC-1)	5	0.200
Manufacturing (SIC-2)	28	0.357
Manufacturing (SIC-3)	33	0.424
Transportation (SIC-4)	8	0.125
Communication, Power, Water (SIC-4)	6	0.833
Retail, Wholesale Trade (SIC-5)	19	0.316
Financial, Hotels, Entertainment (SIC-6—7)	8	0.750
Health Care Services (SIC-8)	38	0.605
Total	150	0.453
Firm Size by Number of Employees		
Less than 1,040	30	0.367
1,041—1,832	30	0.467
1,833—4,098	30	0.533
4,099—13,127	30	0.333
13,128 and greater	30	0.567
Total	150	0.453
Per-Employee Payroll		
Less than $17,180	30	0.533
$17,181—$23,274	30	0.400
$23,275—$31,896	30	0.467
$31,897—$42,096	30	0.400
$42,097 and greater	30	0.467
Total	150	0.453

INSURED DATA

For our analysis of PPD claimants at insured employers, we used claims data from the Workers Compensation Insurance Ratings Bureau (WCIRB), a private entity responsible for proposing and publishing workers compensation insurance premiums and class rates. The data are from the Uniform Statistical Reporting Plan (USR) database from the WCIRB.

All claims for permanent partial disability from insured firms in California are reported to the WCIRB. We received data for claims that occurred on policies opened from 1989 to 1994.[2] The data from the WCIRB provide detailed information about the characteristics of claims and injuries, and information on benefits and expenses as they were incurred and paid, plus some information on how claims were processed. These data are provided only for claims submitted

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[2]Policies reopen every year, and therefore all policies with claims are included.

against employers who are covered by workers compensation insurance carriers. These are the same claims used for the analysis in Peterson et al. (1998).

All of the claims information was updated in January 2000. As a result, the later accident years (1993 through 1995), which were not mature claims at the time of the first report, now reflect up to four years of development.

WAGE DATA

The wage data are from the Base Wage file maintained by the EDD. Every quarter, employers covered by Unemployment Insurance (UI) in California are required to report the quarterly earnings of every employee to the EDD. These reports are stored in the Base Wage file. The industries covered by UI are virtually identical to the industries covered by workers compensation.[3] Therefore, an employee injured at a firm against which the employee can make a workers compensation claim should also have a record under his or her name for that quarter in the Base Wage file.

The EDD data have several limitations. First, they do not report earnings in the uncovered sector, or more important, earnings in another state. The control methodology described in Chapter 2 is partly intended to correct for this problem. Only if the injured worker is more likely than the control group to receive earnings in the uncovered sector or out of state will the result be biased. Another limitation of the EDD data is the length of the earnings period, which is quarterly. With quarterly earnings data, it is impossible to distinguish between the hourly wage effects of a disability and a reduction in hours or weeks worked. However, quarterly earnings data are not a limitation on the estimation of total earnings loss.

LINKING CLAIMS AND WAGE DATA AND SELECTING CONTROLS

The match rate of claims data to wage data for the self-insured firms was very high. Of the 103,416 claims with individual identifiers provided by the employers, less than 2 percent (1,701) were not matched by Social Security numbers to the EDD data.

A number of steps were then taken to arrive at the final analysis sample consisting of 21,852 PPD claims with injury dates from the second quarter of 1991 through the fourth quarter of 1995. Primarily, these steps involved dropping non-PPD claims (medical-only and temporary-

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[3]In both systems, federal civilian and military employees, U.S. postal service workers, railroad employees, and the self-employed are excluded.

only claims), dropping claims after 1995 and before the second quarter of 1991, and selecting only first-observed PPD claims. These steps are detailed in Appendix A.

To select controls for the injured workers, RAND provided the EDD with an identifier for each of the 68 private firms that had provided claims data to RAND. The EDD then identified every worker in the state who had worked at the 68 employers at some point over the six years (1991 through 1996). The EDD next created a database with quarterly earnings for every job in California from 1989 through 1998 for all workers at all 68 employers.

After removing the injured workers from the database by using the individual identifiers provided by RAND, the EDD stripped the identifiers for the uninjured workers from the data and provided the wage data files to RAND. Using this data file, RAND was able to select up to five controls for every injured worker. See Table A-4 in Appendix A for a list of the number of controls per injured worker at private, self-insured employers.

As discussed in Peterson et al. (1998) and Reville (1999), the match rate of claims data from the WCIRB to the EDD wage data was also very high. Because obtaining information on all earnings of every worker at every insured firm in California was not an option for the original study, a 20 percent random sample of claims was provided to the EDD, and the EDD selected the controls.

Unlike the self-insured data, only approximately 65 percent of Social Security numbers for injured workers in the WCIRB data were matched to workers at the same firm to create controls. The primary reason for a relatively low match rate of controls to injured workers is that small firms are less likely to have any other workers with wages in the allowed wage range,[4] which leads to a sample of insured firms that over-represents larger firms. See Peterson et al. (1998) and Reville (1999) for more information on the insured sample.[5]

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[4] The EDD selected controls by choosing workers whose wages were within a fixed distance (approximately 10 percent) of the wages of the injured worker. See the appendix of Reville (1999) for further information.

[5] A detailed description of the data is provided in the appendix of Reville (1999).

CHAPTER 4

RESULTS ON EARNINGS LOSSES AND REPLACEMENT RATES

In this chapter and the three chapters that follow, we report the empirical results of our research. First, in this chapter, we report our estimates of earnings losses and replacement rates for workers injured at private, self-insured firms. We also compare earnings losses for self-insured employers to new estimates for the same injury years for insured employers.

In Chapter 5, we compare post-injury employment patterns at self-insured employers with those at insured employers to evaluate the claim that return-to-work is better at self-insured firms. In Chapter 6, we examine differences in losses, replacement rates, and uncompensated earnings losses by severity of injury. Finally, in Chapter 7, we empirically explore the explanation for differences between the self-insured and insured firms, focusing on the impact of firm size on proportional earnings losses and pre-injury earnings on replacement rates.

SELF-INSURED EMPLOYERS: BASELINE RESULTS

Figure 4-1 shows the average quarterly earnings of permanent disability claimants at private, self-insured firms in 1993 before and after injury, along with the average quarterly earnings of their comparison group. The earnings peak at Quarter 0, the quarter of injury, because all employees are observed working at the at-injury employer for at least part of that quarter.[1] In any other quarter, some individuals (both injured workers and comparison workers) will have no EDD earnings reported and will be assumed to have zero earnings.

Examination of the 12 quarters prior to injury provides a check on the quality of the controls in terms of providing an accurate comparison. The injured workers and comparison workers are matched on the basis of average quarterly earnings over the four quarters prior to injury. The average earnings difference for the first to fourth quarters prior to the match period is $68, and for the fifth to eighth quarters prior to the match period, the difference is $32. This slight difference among the quarters before the match period suggests that the comparison workers are high-quality controls for the injured workers.

In the first quarter after injury, average earnings of injured workers drop 21 percent relative to their comparison workers. Little evidence of recovery in earnings is observed over the

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[1] The quarter of injury is defined as the last quarter with observed earnings prior to the date of injury reported on the claims data. We changed the quarter of injury in 0.56 percent of the cases, in which the quarter of injury had no earnings but there was a quarter with earnings within the previous 12-month period. If there was no wage data in the year prior to injury, the claim was dropped.
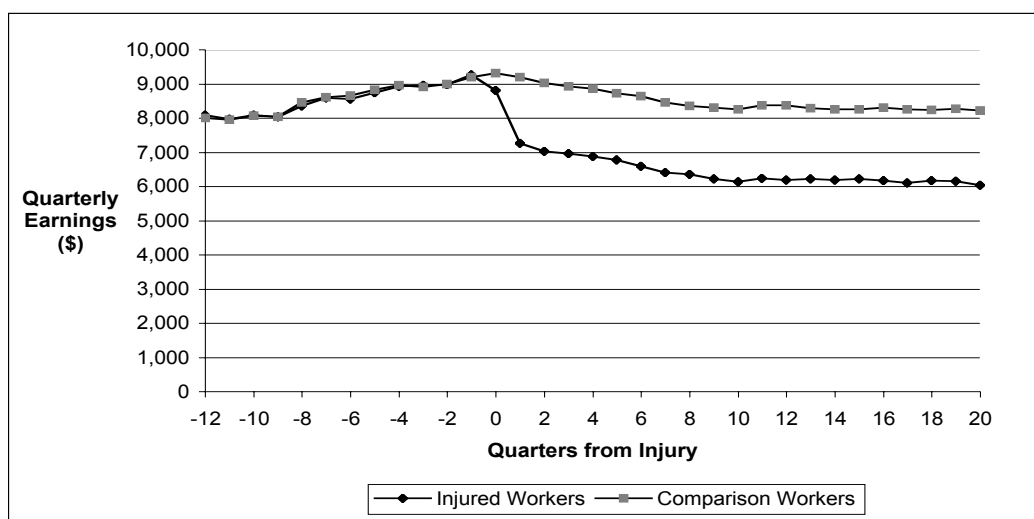
Figure 4-1 Earnings Before and After Injury of Partial Disability Claimants at Self-Insured Firms in California, 1993

quarters following injury; by Quarter 20, five years after injury, the average earnings of injured workers are still significantly lower than the average earnings of comparison workers.

Figure 4-2 reports the earnings in 1995 of injured workers at self-insured firms and their comparison workers before and after the quarter of injury. This figure provides only three years of post-injury earnings, but five years of pre-injury earnings with which to test the quality of the controls. As the figure shows, the earnings of the two groups track very closely over the years prior to injury. Even at Quarters 13 to 16 before the match period (the fifth year before injury), the difference is only $97, or 1.3 percent. As with the 1993 earnings illustrated in Figure 4-1, the earnings of injured workers decline significantly after the quarter of injury, and the difference in average earnings is maintained over the three observed years after injury.

Table 4-1 reports average proportional and total earnings losses and replacement rates (before- and after-tax) for 1991 through 1995 at three, four, and five years after injury for workers injured at self-insured employers in California.[2] The results for 1993, the latest year for which five years of post-injury earnings are available, are shaded because they are the focus of this discussion.

The top panel of Table 4-1 reports before-tax earnings losses three years after injury. The shaded row shows that earnings losses were $24,127 before-tax over the three years after injury

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[2] All dollar amounts are in 1997 dollars.
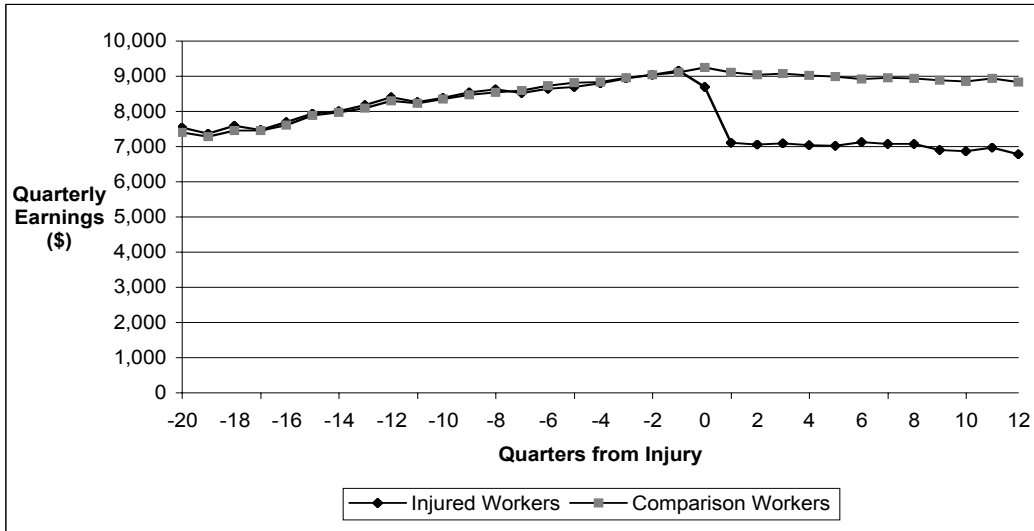
Figure 4-2 Earnings Before and After Injury of Permanent Partial Disability Claimants at Self-Insured Firms in California, 1995

(from 1993 through 1996) for workers with permanent disability claims at self-insured firms in California. To calculate the earnings losses reported in the table, Equation 2-1 (shown in Chapter 2) is discounted and converted to 1997 dollars; that is, letting r denote the discount rate,[3] and t denoting quarters, you have Equation 4-1.

Equation 4-1

$$3\text{-year earnings loss} = \sum_{t=0}^{12} \frac{1}{(1+r)^t}(y_t^U - y_t^I)$$

The total earnings for the comparison group (potential uninjured earnings) over the three years after injury is $108,847, which represents the earnings the injured workers would have received had they not been injured. Dividing earnings losses by potential uninjured earnings, as was done in Equation 2-2 in Chapter 2, gives proportional earnings losses of 0.222.

Therefore, workers injured at self-insured firms in California in 1993 lost 22.2 percent of their earnings over the three years after injury. Examining proportional earnings losses at three years for the other years of injury shows that proportional losses were somewhat higher in 1991 (24.1 percent) and somewhat lower by 1995 (20.8 percent). As noted in Reville and Schoeni (2000), proportional losses have been declining in California over the 1990s.

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[3] An annual rate of 2.3 percent is used to discount future earnings. This is the same real discount rate used in research by the Social Security Administration.

Table 4-1

Earnings Losses, Proportional Loss, and Replacement Rate by Year of Injury and Years After Injury, Self-Insured Firms in California, 1991 Through 1995

Years After Injury	Year of Injury	Earnings Losses ($)	Potential Uninjured Earnings ($)	Total Indemnity ($)	Propor. Loss	Replace. Rate
Before-Tax						
	91	26,081	108,255	15,157	0.241	0.581
	92	23,149	104,438	15,538	0.221	0.671
3	93	24,127	108,847	15,607	0.222	0.647
	94	24,538	109,989	15,129	0.223	0.617
	95	23,403	112,681	15,511	0.208	0.663
	91	33,768	137,172	16,963	0.241	0.502
4	92	30,268	133,046	17,497	0.227	0.578
	93	31,818	139,264	17,588	0.228	0.553
	94	32,772	141,649	17,084	0.231	0.521
	91	41,655	165,210	18,176	0.246	0.436
5	92	37,004	160,993	18,882	0.230	0.510
	93	39,529	168,878	19,076	0.234	0.483
Simulated After-Tax						
	91	31,460	126,606	18,176	0.248	0.578
5	92	28,127	123,550	18,882	0.228	0.671
	93	29,846	129,149	19,076	0.228	0.639

The total indemnity paid by three years for permanent partial disability (PPD) claimants at self-insured employers in 1993 is $15,607.[4] This amount includes temporary disability, permanent disability, and vocational rehabilitation maintenance allowance. Dividing this amount by the total losses of $24,127 provides the replacement rate (see Equation 2-3 in Chapter 2), which is 0.647. Therefore, 64.7 percent of three-year pre-tax earnings losses are replaced by workers compensation indemnity benefits.

Comparing across the five injury years 1991 through 1995, the lowest three-year before-tax replacement rate is 0.581, which is observed for 1991. The highest three-year before-tax replacement rates, approximately two-thirds of earnings losses, are observed in 1992 and 1995. When additional years after injury are observed, earnings losses, potential uninjured earnings, and total benefits increase.

By five years after injury, total before-tax earnings losses are almost $40,000. With potential uninjured earnings of $168,878, proportional earnings losses are 23.4 percent. In most years, we find that proportional losses do not increase with time from injury, indicating that total

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[4] We do not observe the actual benefit stream paid. We cap total indemnity for large claims to reflect the rate at which benefits are paid according to the schedule. For details, see Appendix A.

quarterly losses do not change significantly as time from injury increases. This pattern is apparent from Figure 4-1, where there is little evidence on average of either recovery or further deterioration. However, for the majority of claimants, all benefits are paid before three years and if benefits are still being received, they are paid at the lower weekly amount of PPD rather than the TTD rate.[5] By the end of Year 5, benefits have increased to $19,076, which leads to a replacement rate of slightly less than one-half of earnings losses for PPD claimants at self-insured firms.

Table 4-1 also shows simulated after-tax earnings losses and replacement rates. Both earnings losses and potential uninjured earnings are approximately one-quarter lower than the before-tax earnings and losses, although earnings losses are reduced by a slightly larger amount than potential uninjured earnings, owing to the progressive tax system in which losses are taxed at a marginal rate while potential uninjured earnings are taxed at an average rate. As a result, proportional earnings losses are slightly lower after tax. However, because indemnity is not taxed, replacement rates are considerably higher after tax. We estimate that by five years after injury, indemnity replaces 63.9 percent of after-tax earnings losses for injuries in 1993.

Because losses are continuing by five years, but only 15 percent of the injured workers would still be receiving indemnity benefits, we project losses to ten years and report the estimates, before and after tax, for 1993, 1994, and 1995 injuries, as shown in Table 4-2. Losses are projected by assuming that the losses observed in the last year of injury continue at the same quarterly amount for ten years. This assumption is based upon the pattern shown in Figure 4-1, where the gap between the earnings of injured workers and comparison workers does not narrow or widen with time after injury.[6]

For indemnity benefits paid by ten years, we use the full incurred indemnity. For each of the three years shown in Table 4-2, we estimate a before-tax replacement rate of approximately one-third. We estimate a ten-year after-tax replacement rate of less than one-half. With losses that are permanent but benefits that are typically paid only over the first few years after injury, the time period over which the loss estimates are calculated is critical: Longer periods lead to considerably lower replacement rates.[7]

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[5] We do not know the exact timing of benefits, but we assume that permanent disability benefits begin to be paid after the temporary disability and vocational rehabilitation allowance are fully paid. See Appendix A.

[6] The difference between losses in Year 4 and losses in Year 5 is $20.

[7] Ultimately, if losses are observed far enough in the future, they will reach the zero mark because the entire sample will have retired (or died). This projection method does not capture the inevitable decline in average earnings associated with retirement of an increasing number of workers over time. As an upper bound on this uncaptured decline, we set losses to zero in the projection period for every worker as he or

Table 4-2

**Ten-Year Projected Losses, Before and After Tax, Self-Insured
Firms, 1993 Through 1995**

	Year of Injury	10-Year Projected Losses ($)	Total Indemnity ($)	Replacement Rate
Self-Insured				
Before-Tax	93	71,027	24,643	0.347
After-Tax	*93*	*53,342*	*24,643*	*0.462*
Before-Tax	94	73,295	23,147	0.316
After-Tax	*94*	*55,096*	*23,147*	*0.420*
Before-Tax	95	66,034	22,987	0.348
After-Tax	*95*	*49,389*	*22,987*	*0.465*

One hypothesis for the losses observed in Figures 4-1 and 4-2 could be that while some injured workers never return to work, most do return and resume the earnings path experienced before the injury occurred. If, for instance, 20 percent of injured workers retire at the date of injury and the rest suffer no permanent consequences, the patterns observed in Figures 4-1 and 4-2 would be explained.

Figure 4-3 explores the hypothesis just stated, and demonstrates that it is not an accurate explanation of the data; in other words, the earnings loss results cannot be explained solely by some injured workers dropping out in the quarter after injury. The figure shows the proportion of PPD claimants and their comparison workers for which the previous quarter is the last quarter in which they are observed. The figure shows the attrition rate from the sample, or the proportion of each category (all PPD claimants, PPD claimants age 25 to 55, and comparison workers) that permanently drop out of the labor force in that quarter. Exiting the permanent labor force may be due to injury but could also be due to retirement or migration out of the California labor force. The difference between the attrition of the injured workers and the comparison workers is the attrition related to injury.

Figure 4-3 shows that all but about 1.1 percent (considerably less than 20 percent hypothesized earlier) of injured workers of *all* ages are observed with earnings reported to the EDD following injury. These findings suggest that almost all injured workers have at least one

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she reaches age 65. This estimate overstates the rate of decline because no attempt is made to eliminate gains associated with comparison workers over 65 (age for these workers is not available in our data). This simulated projection leads to a before-tax replacement rate of 0.40 and an after-tax replacement rate of 0.532 for 1993 injuries.

return-to-work attempt.[8] The comparison workers attrition rate shown in Figure 4-3 is 0.085 percent in Quarter 0, almost the same number as for the injured workers. The figure also shows that in every quarter after the quarter of injury, the proportion of injured workers who leave the workforce is greater than the proportion of their uninjured counterparts who leave, suggesting that while an injury puts a worker at greater risk of exiting the California labor force, he or she may not actually exit the labor force until many quarters after injury.
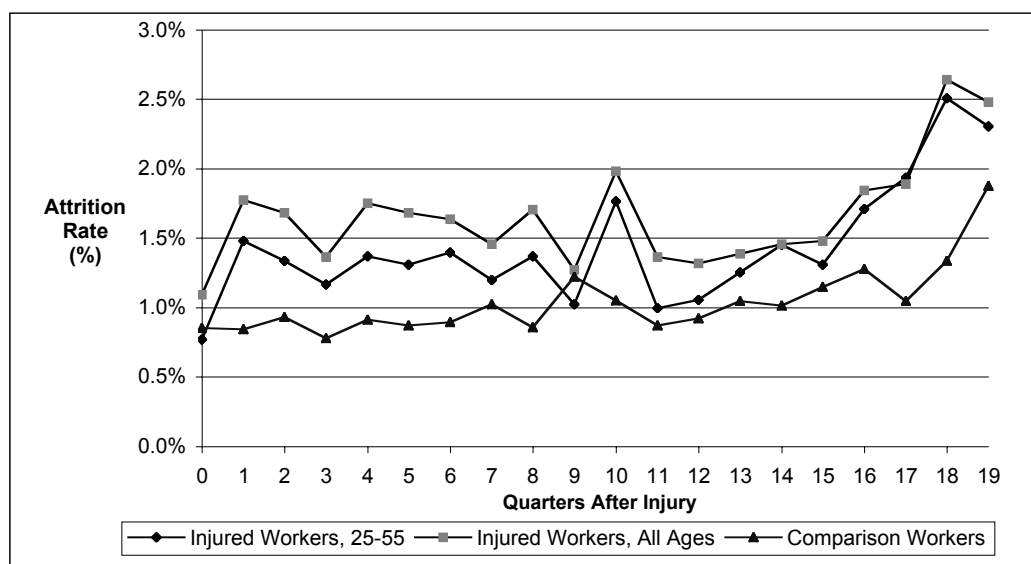
Figure 4-3—Attrition (Retirement) Among Injured Workers Age 25—55 and All Ages, Permanent Partial Disability Claimants at Self-Insured Firms in California, 1993

Figure 4-3 breaks out the attrition rate for workers age 25 to 55 who are not, without injury, at risk of retirement. This group of injured workers has a higher probability of dropping out in every quarter after injury than their uninjured counterparts (including workers over 55, who are at risk of retirement). In general, Figure 4-3 demonstrates that the future employment consequences from a permanently disabling workplace injury are complex. This issue will be explored further in the discussion of return to work in Chapter 5.

We explored at some length the possibility that wage losses were generated by early retirement among workers over age 55, a hypothesis suggested by reviewers of the earlier RAND report (Peterson et al., 1998). We estimated wage losses after restricting the population of injured workers to those age 25 to 55. Because the comparison workers include workers under 25 and

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[8] Some workers may not return to work but would appear in the data as though they have because they have salary continuance reported to the EDD as wages. We do not know how often this is the case.

over 55, as well as age 25 to 55, wage losses for this group would be underestimated.[9] We found that even the five-year before-tax proportional wage losses in 1993 for PPD claimants age 25 to 55 was 19.3 percent. Therefore, estimated earnings losses stated in this report are not generated by the early retirement of workers over age 55.[10]

Wage loss can occur when permanently disabled workers withdraw from the labor force for relatively long periods of time, or when they return to work and remain at work, but have wages or hours on the job that are less than what they would have been had the injury not occurred.

Figure 4-4 shows the quarterly average earnings for injured workers with PPD claims who have some reported earnings greater than zero for that quarter at self-insured employers in 1993. The figure also shows the average earnings for the control group chosen for these workers with positive reported earnings in the quarter. Both injured workers and controls with no earnings are eliminated from the sample in each quarter.
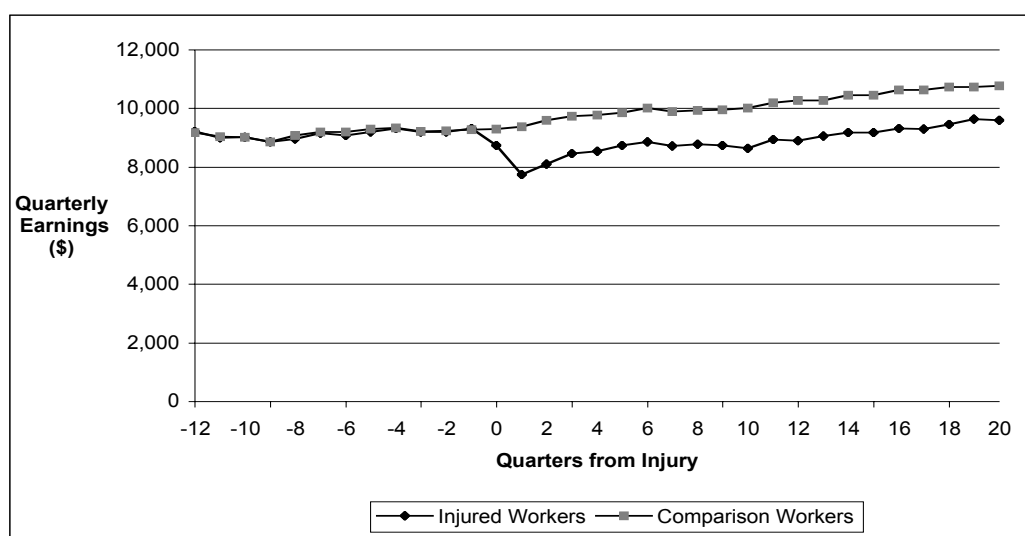
Figure 4-4 Quarterly Wages of Partial Disability Claimants Before and After Injury at Self-Insured Firms in California, 1993

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[9] The EDD data do not include information on the age of a worker, and therefore we do not have this information for any of the comparison workers. Most of the self-insured employers provided us with the birthdates of their injured workers. An unbiased estimate of the impact of a worker s age on his or her losses would require birthdate information for both the injured worker and the comparison worker.

[10] In general, if the average age of the comparison workers is below the average age of the injured workers, then estimated earnings losses would be overstated because the comparison workers data would not include the potential (uninjured) retirement of the injured workers. Given the findings described here, it is unlikely that any such overstatement would significantly bias the results.

Figure 4-4 clearly shows that labor force withdrawal is not the only reason for persistent wage loss among PPD claimants. Reduced wages are also part of the explanation. In the quarter after injury, injured workers quarterly wages are 19.5 percent lower than comparison workers wages. By Quarter 20, quarterly wages are 12 percent lower.[11]

Peterson et al. (1998) reported two estimates for wage losses, an *upper bound* and a *lower bound* estimate. The upper bound estimate for wage losses was calculated using the method discussed earlier in this chapter in relation to Table 4-1. This estimate does not distinguish between time out of work immediately after injury and subsequent time out of work: All losses during time out of work at any time after injury are equal to the earnings of the comparison worker during that period.

On the strong assumption that after the first return to work, subsequent time out of work reflects a decision not to work on the part of the injured worker, Peterson et al. (1998) also estimated a lower bound on wage losses, which counts only those losses from time out of work before the first return to work. All later time out of work in the lower bound estimate was assumed to be unrelated to injury and was ignored. We estimate the lower bound on proportional wage loss to be 14.7 percent for workers injured at self-insured firms in 1993.

THE IMPACT OF SAMPLING AND RESPONSE BIAS ON ESTIMATES

As noted in Chapter 3, the sample of self-insured employers responding to our request for data differed in many ways from the population of self-insured employers. Typically, the firms that provided data are larger, pay higher wages, and are concentrated in specific industries. We constructed employer-level weights to account for sampling and response bias. We then re-estimated the results shown in Table 4-1 by weighting each individual using the appropriate weight for the firm where the individual was injured. The method for constructing these weights is described in more detail in Appendix A.

In effect, this technique increases the weight in the calculations to favor smaller firms that have lower average wages, and firms in industries in which employers were less likely to provide data than in other industries. The results of the weighted analysis are reported in Table 4-3.

In comparing the data in Tables 4-1 and 4-3, the weighted results for earnings losses are consistently higher in Table 4-3. The weighted potential uninjured earnings are consistently lower than the unweighted potential earnings, reflecting the adjustment for firms with lower average

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[11] Because a worker with no reduction in hourly wages can end up with lower quarterly wages if the worker is on the job only a partial quarter (as many certainly are during the quarter after injury), Figure 4-4 charts an upper bound on the reduction in weekly or hourly wages after injury.

earnings. As a result, the proportional losses shown in Table 4-3 are consistently higher than those shown in Table 4-1, suggesting that sampling and selected response among employers led to estimates of proportional losses that are too low. For instance, the five-year before-tax proportional losses for 1993 PPD claims total 23.4 percent in Table 4-1, but after weighting, the proportional losses for these claims total 25.3 percent, as shown in Table 4-3.

Table 4-3

Pre-Tax Weighted Earnings Losses, Proportional Losses, and Replacement Rates by Year of Injury and Years After Injury, Self-Insured Firms in California, 1991 Through 1995*

Years After Injury	Year of Injury	Earnings Losses ($)	Potential Uninjured Earnings ($)	Total Indemnity ($)	Propor. Losses	Replace. Rate
	91	29,014	101,818	15,452	0.285	0.533
	92	25,862	99,846	16,052	0.259	0.621
3	93	24,439	101,822	15,866	0.240	0.649
	94	26,410	99,848	15,363	0.265	0.582
	95	24,175	101,076	15,770	0.239	0.652
	91	36,941	128,876	17,355	0.287	0.470
4	92	33,658	127,098	18,154	0.265	0.539
	93	32,128	130,209	17,845	0.247	0.555
	94	35,095	128,715	17,426	0.273	0.497
	91	45,373	155,153	18,680	0.292	0.412
5	92	41,116	153,534	19,613	0.268	0.477
	93	39,950	157,941	19,329	0.253	0.484

*Estimates are weighted for sampling and nonresponse.

The total indemnity benefits paid as shown in Table 4-3 are also consistently higher than those shown in Table 4-1 (except in one category 1993 injuries at four years). This finding may reflect smaller temporary indemnity benefit payments because it is easier to accommodate injured workers at larger firms, which allows workers to return to work sooner, or the fact that the more highly paid workers tend to return to work sooner. It may also reflect that the responding sample may have had less severe permanent disabilities.

The result, however, is that the replacement rates shown in Table 4-3 are not always lower than the replacement rates in Table 4-1. This difference is illustrated by using Equation 2-3, shown in Chapter 2, in which both the denominator (earnings losses) and the numerator (total benefits) will decline in value, which could increase or decrease replacement rates depending upon which declines proportionally more. In particular, replacement rates for 1993 injuries at self-insured employers are almost identical for the weighted and unweighted estimates. In

general, however, replacement rates are lower for the weighted estimates than the unweighted estimates.

The weighted estimates suggest that sampling and nonresponse biases understate proportional wage losses at self-insured employers and overstate replacement rates somewhat. However, the weighting methodology led to particularly large weights for some employers and therefore their injured workers. The large weights applied to a small number of firms increase the volatility of the estimates considerably when comparisons are made across smaller samples, such as by quarter or across subsamples by firm size, severity, or preinjury earnings. For this reason, we report unweighted estimates in the remainder of this report.

COMPARING ESTIMATES OF EARNINGS LOSSES AND REPLACEMENT RATES AT INSURED AND SELF-INSURED EMPLOYERS

Figure 4-5 reports earnings for PPD claimants at insured firms in 1993 for the three years before and five years after injury, together with the earnings of their matched comparison workers. This figure can be compared to Figure 4-1, which reports comparable estimates for the self-insured firms. The patterns shown in the two figures are similar.
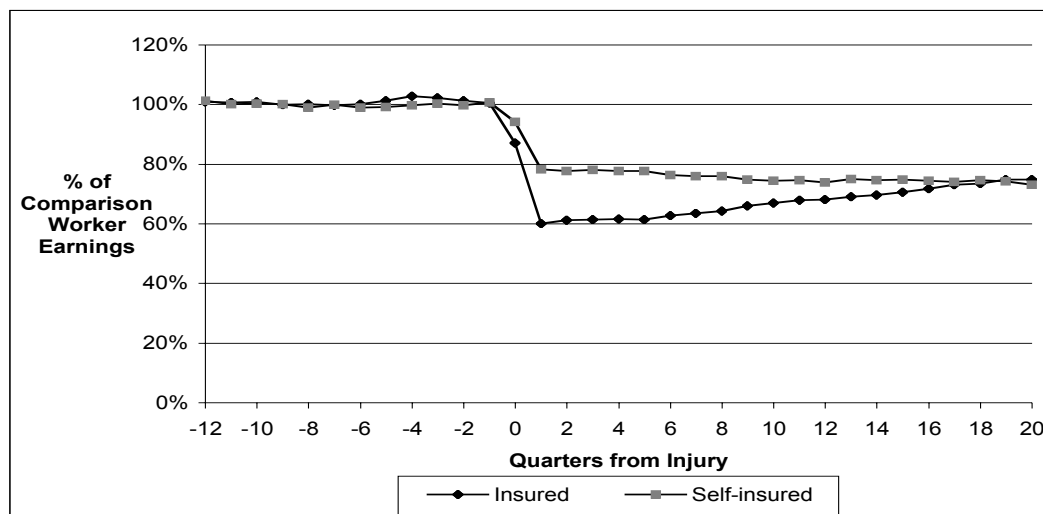
Figure 4-5 Earnings Before and After Injury of Permanent Partial Disability Claimants at Insured Firms in California, 1993

Over the three years prior to injury, the earnings paths of the injured workers and the comparison workers are very much alike. As was done with the self-insured employers noted earlier, earnings during the first four quarters prior to injury at insured firms are used to match controls to injured workers, and the eight quarters prior to that four-quarter match period can be used to test the quality of the controls. The average difference in earnings between the injured workers and the comparison workers is $16 during the first four quarters prior to the match period

and $24 during the second four quarters prior to the match period (that is, Quarters 9 through 12 before injury).[12]

The drop in average earnings at the time of injury for workers at insured firms is more pronounced than the drop for workers at self-insured firms. Earnings of workers at insured firms drop in the first quarter after injury by almost 40 percent. As with the self-insured firms, the earnings gap between injured workers and their comparison workers continues over the 20 quarters after injury.

Figure 4-6 directly compares the earnings impact of a disabling injury at insured firms with the impact at self-insured firms. The figure reports the earnings of injured workers as a percent of comparison worker earnings by quarters from injury at both insured and self-insured firms in 1993. This proportion equals 100 percent over the three years prior to injury because the earnings of the injured workers over that period equal the earnings of the control workers at both the self-insured and insured employers.
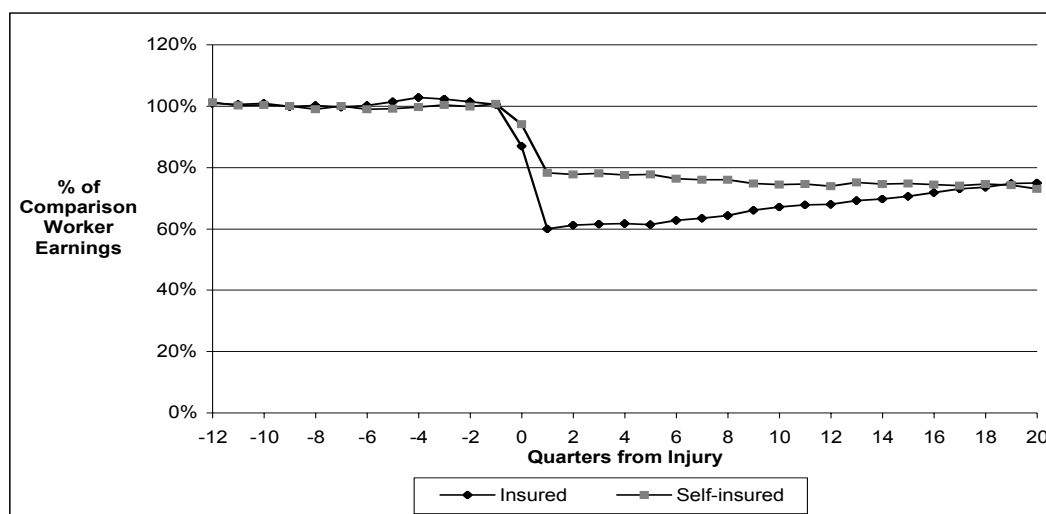
Figure 4-6 Ratio of Injured Workers Earnings to Comparison Workers Earnings, 1993 Injuries, Self-Insured and Insured Firms

After injury, this proportion is less than 100 percent, which implies that injured workers earn less than their comparison workers and the proportion is considerably lower for the workers

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[12] As discussed in Chapter 2, the controls are selected for the insured without matching on tenure. We found that while matching on tenure significantly improved match quality for the self-insured, it did not improve the quality of the match for the insured claims. In particular, during the Quarters 9 through 12 before injury for 1993 claims, the average difference for the insured claims between injured workers and comparison workers using the tenure criterion was $27 essentially identical match quality without tenure. At the same time, the sample size declined from 7,937 to 6,073, a reduction that was more likely to eliminate claims from small firms.

with injuries at insured firms. Workers injured at insured firms earn 60 percent of what their comparison workers earn in the quarter after injury, while workers injured at self-insured firms earn 80 percent of what their comparison workers earn.

Over the five years after injury, there is evidence of convergence between the two groups in terms of proportional losses, such that by five years after injury workers injured at both insured and self-insured employers on average are earning approximately 80 percent of what their comparison workers earn. Therefore, it appears that significant differences exist between firms as far as in the impact of a disabling injury in the first one to two years after injury, although the differences diminish as the number of years after injury increases. These differences will be explored further in the next chapter when return to work is compared at self-insured and insured firms.

Table 4-4 reports the estimates of earnings losses, proportional losses, and replacement rates for PPD claimants at insured firms, which correspond to the estimates for self-insured firms in Table 4-1.[13] PPD claimants in 1993 lost $22,951 over the three years after injury, as shown in Table 4-4. The comparison workers earned $66,846 over the same time period, and therefore proportional losses at three years for 1993 injuries were a little over 34 percent. Table 4-4 shows clearly that both total losses and proportional losses declined at insured firms the three years after injury from 1991 through 1994, falling from proportional losses of 43 percent in 1991 to 31 percent in 1994.

After three years, PPD claimants at insured firms in 1993 had received $14,674 in benefits, including temporary disability, permanent disability, and vocational rehabilitation maintenance allowance. These benefits represent a before-tax replacement rate of close to 64 percent. As with the decline in proportional losses from 1991 through 1994, the table shows that three-year replacement rates increased from 58 percent in 1991 to 68 percent in 1995.

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[13]Early versions of some of the estimates in Table 4-4 were reported as Method II in Table 5.3 of Peterson et al. (1998). These estimates were based on earnings data through the second quarter of 1996 and earlier reports (claims with less maturity) from the Workers Compensation Insurance Ratings Bureau. The estimates in the Peterson et al. table are somewhat higher (for example, five-year losses for 1991 of $46,677). There are two reasons for this difference. First, the estimates for 1991 at five years are for the first and second quarters of 1991 only. Losses fell from 42 percent during the first and second quarters of 1991 to 38 percent during the third and fourth quarters (see Reville and Schoeni, 2000). In addition, Peterson et al. assumed that losses were missing when both the injured workers and the comparison workers were not observed with earnings on the EDD file. An alternative approach adopted in this report assumes that losses are zero when both workers earnings data are missing. Averaging in zeros when both the injured worker and the comparison worker are retired lowers average losses somewhat. It also lowers potential earnings somewhat, and therefore has very little effect on proportional losses. However, this approach raises replacement rates because benefits are not affected by the calculation although losses are smaller on average.

Table 4-4

Earnings Losses, Proportional Losses, and Replacement Rates by Year of Injury and Years After Injury, Insured Firms in California, 1991 Through 1995

Years After Injury	Year of Injury	Earnings Losses ($)	Potential Uninjured Earnings ($)	Total Indemnity ($)	Propor. Loss	Replace. Rate
Before-Tax						
	91	26,929	62,604	14,276	0.430	0.530
	92	23,837	63,116	14,416	0.378	0.605
3	93	22,951	66,846	14,674	0.343	0.639
	94	21,399	68,818	14,945	0.311	0.698
	95	23,113	70,844	15,803	0.326	0.684
	91	32,651	78,348	16,085	0.417	0.493
4	92	28,998	79,548	16,243	0.365	0.560
	93	28,422	85,250	16,412	0.338	0.577
	94	26,356	88,459	16,711	0.298	0.634
	91	37,600	93,361	17,288	0.403	0.460
5	92	33,551	95,747	17,459	0.350	0.520
	93	33,158	103,456	17,603	0.321	0.531
Simulated After-Tax						
	91	29,275	73,356	17,288	0.403	0.590
5	92	26,057	75,063	17,459	0.347	0.670
	93	25,616	80,744	17,603	0.317	0.687

By examining our estimates of five-year losses for 1993 injuries shown in Table 4-5, summarizing Table 4-1 and Table 4-4, we see that five-year total earnings losses are lower at insured firms ($33,158) than at self-insured firms ($39,529), but potential uninjured earnings are much lower at insured firms and therefore the proportional earnings losses are higher at insured firms (32 percent compared with 23 percent).[14] This result is also suggested by Figure 4-6.

One would expect that if proportional losses are lower at some firms, then replacement rates would be higher. However, replacement rates are not based on proportional losses but on total losses. Therefore, workers with higher earnings are at risk of greater total losses, even if proportional losses are lower. As shown in Table 4-5, the benefits at self-insured firms at five years ($19,076) are comparable to benefits at insured firms ($17,603), and because total losses are higher at self-insured firms, the replacement rates are lower at self-insured firms. In particular, the five-year before-tax replacement rate at insured firms for workers injured in 1993 is 53 percent, whereas the replacement rate for workers injured at self-insured firms is 48 percent.

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[14] The lower bound on proportional earnings losses, calculated on the assumption that no time out of work following the initial return to work is injury-related, is 23.9 percent in 1993 at insured firms. As noted earlier in this chapter, the lower bound on proportional losses is 14.7 percent for self-insured firms in 1993.

Table 4-5

Earnings Loss and Replacement Rates, Self-Insured and Insured Firms, 1993 Injuries

	5-Year Before-Tax	5-Year After-Tax
Self-Insured Firms		
Earnings Losses	$39,529	$29,846
Potential Uninjured Earnings	$168,878	$129,149
Total Indemnity	$19,076	$19,076
Proportional Loss	0.234	0.228
Replacement Rate	0.483	0.639
Insured Firms		
Earnings Losses	$33,158	$25,616
Potential Uninjured Earnings	$103,456	$80,744
Total Indemnity	$17,603	$17,603
Proportional Loss	0.321	0.317
Replacement Rate	0.531	0.687

Table 4-6, which corresponds to Table 4-2 for the self-insured firms, reports ten-year projected losses at insured firms. The ten-year projected replacement rates for 1993 are 40 percent before tax, and 57 percent after tax. These rates continue to be higher than the replacement rates at self-insured firms, which are 35 percent before tax and 46 percent after.[15]

Table 4-6

Ten-Year Projected Losses, Before and After Tax, Insured Firms, 1993 Through 1995

	Year of Injury	10-Year Projected Losses ($)	Total Indemnity ($)	Replacement Rate
Insured				
Before-Tax	93	53,438	21,201	0.397
After-Tax	*93*	*40,842*	*21,201*	*0.520*
Before-Tax	94	51,869	20,946	0.404
After-Tax	*94*	*39,703*	*20,946*	*0.528*
Before-Tax	95	61,066	22,163	0.363
After-Tax	*95*	*46,648*	*22,163*	*0.475*
Self-Insured				
Before-Tax	93	71,027	24,643	0.347
After-Tax	*93*	*53,342*	*24,643*	*0.462*

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[15] As noted earlier in this chapter, the projection method assumes that quarterly wage loss in the future is equal to the last observed quarterly wage loss. For the self-insured firms, this assumption seemed appropriate based on the trend in the observed period. However, for the insured firms, annual wage loss declined from Year 4 to Year 5 by 13 percent. We therefore estimated an alternative projection that assumed a 13 percent rate of decline. This method led to a before-tax replacement rate at ten years of 0.438 and an after-tax replacement rate of 0.572. In addition, as with the self-insured firms, we estimated a projection model that set wage losses to zero when the injured worker reached age 65, as similarly discussed for the self-insured firms in Footnote 7. This calculation, in addition to the 13 percent decline, led to a before-tax replacement rate of 0.479 and an after-tax replacement rate of 0.625.

CHAPTER 5

**COMPARING RESULTS ON RETURN TO WORK AT INSURED AND
SELF-INSURED FIRMS**

One of the primary motivations for this study of the adequacy and equity of permanent
disability benefits at self-insured employers stems from the anecdotal evidence that return to
work is better at self-insured firms than it is at insured firms in California. As discussed in
Chapter 1, the term *return to work* refers to a broad range of measures of post-injury employment,
including the amount of time it takes for injured workers to return to the job, retention after injury
at the employer of injury, subsequent injury-related unemployment, and other measured factors.

For instance, as Chapter 4 discusses, workers at self-insured firms have lower
proportional wage losses during the first few years after injury, which could be attributed to more
continuous employment in the years immediately following injury. As noted in Chapter 1,
economic theory suggests that return to work will in fact be better in most cases at self-insured
firms, and the empirical literature supports this prediction (Krueger, 1990; Biddle, 1998a, 1998b).

In this chapter, we examine post-injury employment among permanent partial disability
claimants at self-insured and insured firms in California.

Typically, return to work is estimated using data on lost workdays and/or temporary
disability benefits. However, these measures capture only one of the dimensions of return to work
that may affect long-term losses the short-term effects of the disability suffered by the worker.
Several recent studies have shown that unemployment subsequent to an initial return to work is
common among injured workers (Biddle, 1998a; Butler, Johnson, and Baldwin, 1995; Krause et
al., 1999; Galizzi and Boden, 1996; Peterson et al., 1998). For this reason, we will examine a
more universal estimate of return to work: post-injury employment relative to a comparison
group.[1]

Figure 5-1 shows the proportion of PPD claimants at self-insured firms in 1993 that are
employed over the three years prior to injury and the five years following injury. At the quarter of
injury, this proportion is 100 percent, because the quarter of injury is the quarter during which the

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[1] We do not measure the amount of time to *first return to work* in this report. While this is an
important component of employer cost, that measurement is not likely to capture the employment
consequences of a disabling injury as effectively as the measure used in this report. We also do not have
temporary disability benefits reported separately for many employers, and the date of return to work was
reported by very few employers.

claims data are matched to the wage data.[2] The quarters prior to injury reflect the entrance into the sample by the injured workers and their comparison workers, and any time out of work unrelated to injury experienced by either group; therefore, the percentages for these quarters are less than 100 percent. Three years prior to injury, 87 percent of both the injured workers and their comparison workers were employed in California.
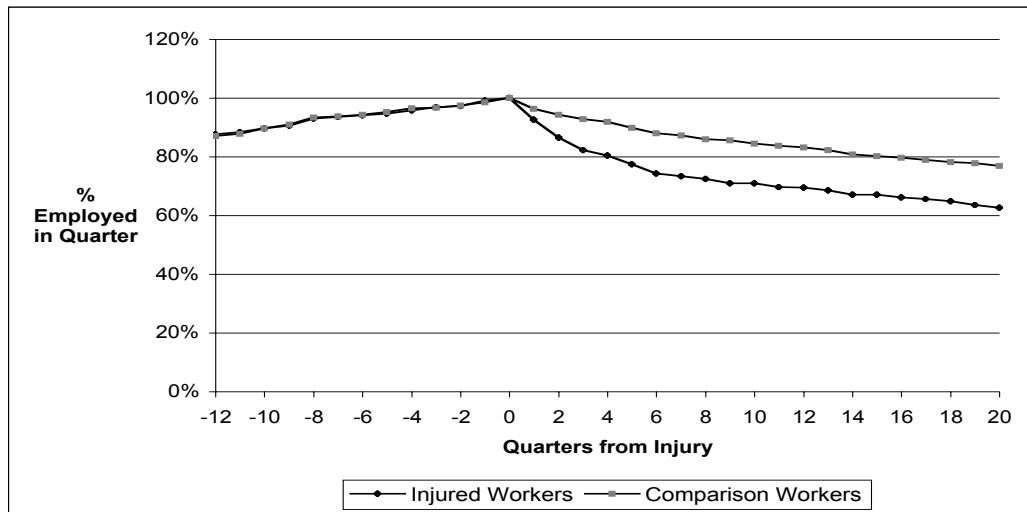
Figure 5-1 Proportion of Workers Employed Before and After Injury by Quarters, Permanent Partial Disability Claimants at Self-Insured Firms in California, 1993

At the time of injury, the proportion of both injured workers and comparison workers who are employed begins to decline, reflecting in part the natural movement in and out of the labor force in California due to retirement, relocation out of the state, or other reasons. Nevertheless, the decline in employment for the injured workers is more pronounced than the decline among the comparison workers.

One quarter after injury, 96.3 percent of the comparison workers but only 92.5 percent of the injured workers are working.[3] Therefore, injury-related time out of work, represented by the gap between the two lines in Figure 5-1, is 3.8 percent. We refer to this time out of work as injury-related because it only reflects time out of work over and above the amount experienced

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[2] As noted in Chapter 4, when there are no earnings from the California Employment Development Department during the quarter of injury as reported on the employer s wage data, the quarter of injury is redefined for up to four quarters before injury and up to the earliest quarter with reported earnings. Therefore, the 100 percent employment in the quarter of injury is an artifact of the way in which the data collection was designed.

[3] It should be emphasized that while this measure of return to work is likely to be a better measure of sustained or continuous return to work because it only counts workers out of work for more than a quarter, and therefore is also a better measure of the long-term employment consequences of an injury, it

by the comparison workers. The injury-related gap increases steadily over time until it reaches
14.4 percent five years after injury.

The pattern of injury-related time out of work among the workers injured at insured firms
is different than that for workers at self-insured firms. Table 5-1 compares various measures of
return to work for self-insured and insured firms.

Table 5-1

**Comparison of Insured and Self-Insured Firms Return to Work, Relative to
Comparison Groups, 1993 Injuries***

Injured Workers	Insurance Status	Quarters After Injury				
		1	3	5	10	20
Fraction not employed in quarter	Self-insured	0.038	0.105	0.125	0.136	0.144
	Insured	0.188	0.248	0.238	0.169	0.089
Fraction exiting labor force by quarter (cumulative to quarter)	Self-insured	0.011	0.024	0.040	0.070	
	Insured	0.046	0.053	0.058	0.061	
Fraction working in quarter but no longer retained by employer	Self-insured	—0.006	—0.011	-0.010	0.010	0.041
	Insured	0.028	0.061	0.114	0.184	0.168

＊All numbers are reported after subtracting the comparison workers outcomes.

Injury-related time out of work at the insured firms is considerably higher than at self-
insured firms during the first few years after injury. In the first quarter after injury, injury-related
time out of work, defined as the difference between the fraction of injured workers not employed
in the quarter after injury and the fraction of uninjured workers not working, is 18.8 percent at the
insured firms and only 3.8 percent at the self-insured firms.

As with the self-insured employers, injury-related time out of work at insured employers
increases during the first three quarters after injury, reaching 24.8 percent at insured firms and
10.5 percent at self-insured firms. At this point, the pattern changes at insured firms and the
difference in the fraction of employed injured and uninjured workers begins to narrow. However,
the difference in the fraction of injured and uninjured workers employed at the self-insured firms
continues to increase. By two and a half years after injury, the injury-related time out of work
percentage has fallen to 16.9 at the insured firms and increased to 13.9 at the self-insured firms.
At five years after injury, the injury-related out-of-work fraction is actually higher at the self-
insured firms than at the insured firms.[4]

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clearly misses some periods of nonwork. In particular, if the initial duration of temporary disability is
shorter than one quarter, it will not be captured using this measure of nonwork.

[4] The higher fraction for the self-insured firms at five years reflects the fact that the controls are
less likely to be out of work. At the insured firms, 65 percent of the comparison workers (and 56 percent of

Figure 5-2 summarizes the comparison between insured firms and self-insured firms post-injury employment of PPD claimants. The figure reports the proportion of injured workers that are employed in each quarter in comparison to workers that are employed, over the three years before and five years after the injury, for both self-insured and insured claimants in 1993.
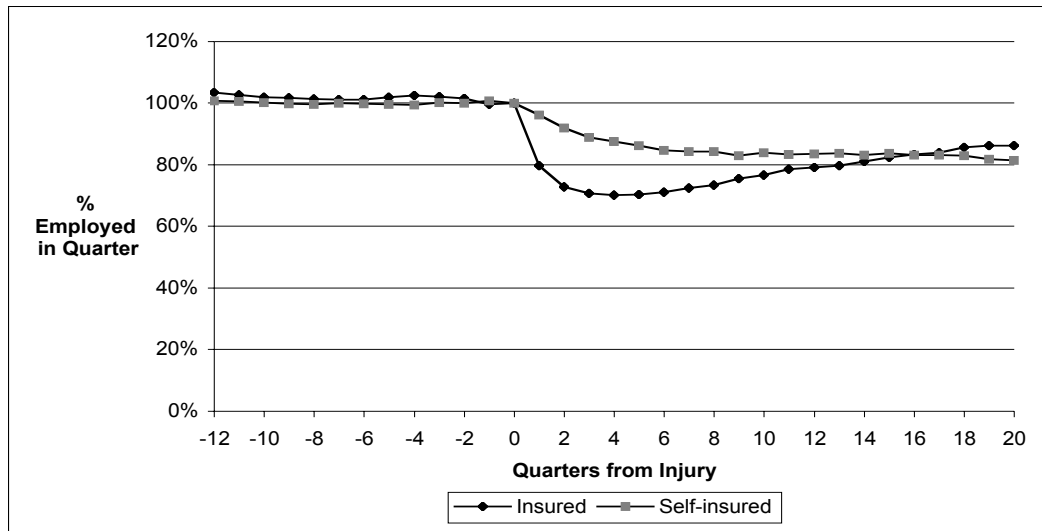
Figure 5-2 Relative Employment Ratio: Injured Employees Working as a Proportion of Comparison Employees Working, Self-Insured and Insured Firms, 1993 Injuries

This *relative employment ratio* represents the proportion out of work for injury-related reasons. This proportion is equal to 100 percent for both the insured and self-insured firms over the three years prior to injury because injured workers are as likely as their comparison workers to be employed prior to injury. After injury, the injured workers are less likely to be employed for both groups (the proportion, therefore, falls below 100 percent), but the workers injured at insured firms experience considerably more time out of work over the first three to four years after injury.

Figure 5-2 suggests that workers at self-insured firms return to work sooner and are less likely to experience subsequent time out of work, at least over the first few years after injury. In the following years, the differences between the two groups disappear, possibly reflecting a greater ability to accommodate injured workers at self-insured firms, or greater motivation to return to work among the self-insured firms higher-skilled, higher-paid workers. Whatever the explanation, it is clear that the *dislocation*[5] in the immediate aftermath of an injury can explain

the injured workers) are working at five years. At the self-insured firms, 77 percent of the comparison workers (and 62.5 percent of the injured workers) are working.

[5] *Dislocation* is a labor economics term for disruption in a worker s career path, with attendant time out of work, lost wages, and other losses due to work interruption.

much of the differences in proportional wage losses between workers at self-insured and insured firms.

The *injury-related cumulative attrition,* which is the fraction of injured workers in each quarter after injury who will never again be observed with earnings (including those who dropped out in previous quarters), is shown in Table 5-1 and noted as the Fraction exiting labor force by quarter. As with post-injury employment, this fraction is reported relative to comparison workers in order to net out attrition related to retirement, movement out of state, or other reasons unrelated to injury.

For the self-insured firms, 1.1 percent more injured workers than control group workers never return to work after the quarter of injury. Over the following two quarters, an additional 1.3 percent (over and above those in the control group) drop out; by Quarter 3, 2.4 percent more injured than control group workers will never return to work.

Compared with the self-insured firms, a considerably larger fraction of employees at insured firms never returns to work over the first few quarters after injury. At insured firms, 4.6 percent more injured workers than control group workers drop out after the quarter of injury, and 5.3 percent over and above the control group drop out by the third quarter.

While this fraction continues to increase over time at the self-insured firms, it does not do so at the insured firms. If workers are going to drop out for injury-related reasons at the insured firms, it appears they will do so immediately after injury. At ten quarters after injury, the fraction that has dropped out is roughly equal at both the self-insured and insured firms.[6]

Post-injury employment is only one dimension of successful return to work. Even if workers can return to gainful employment, their need to change employers may lead to a loss of employer-specific skills and loss of wage gains associated with tenure. In the ideal case, return to work implies return to the at-injury employer.

Figure 5-3 reports the proportion of workers with PPD claims at self-insured firms in 1993 who are employed by the at-injury employer. To separate this issue from the issue of decreased employment among injured workers, when examining the proportion of injured workers employed at the at-injury employer, we restrict the sample to only those individuals currently working.

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[6] Drop-out rates in later quarters are biased by the fact that as the current observed period moves closer to the last period being examined, the fraction of workers who have an ability to return to work within the remaining time period declines. At Quarter 20, for instance, everyone out of work will be counted as having dropped out. For this reason, we only report the result to Quarter 10, which captures all of those people who will not be observed for at least another two and one-half years.
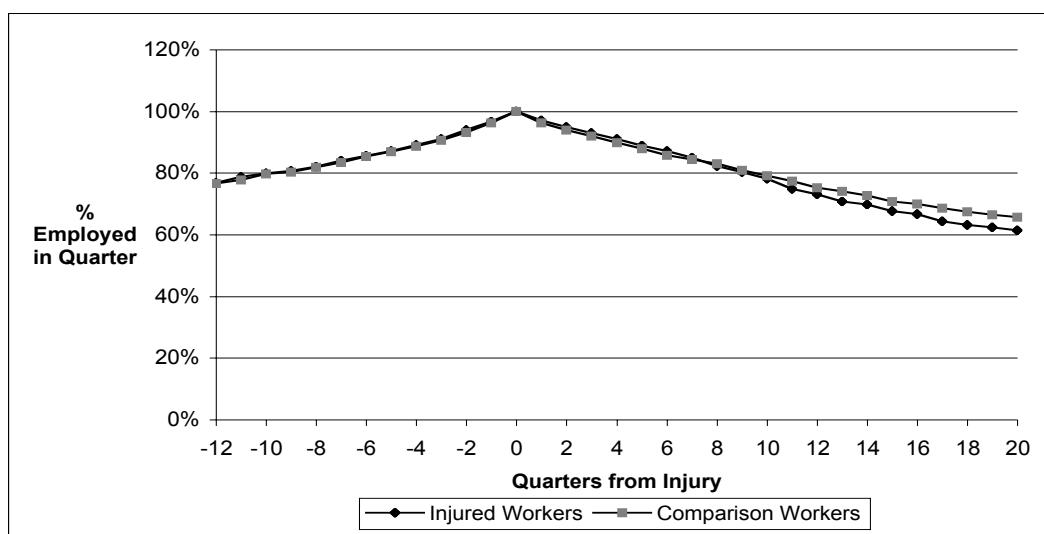
Figure 5-3 Proportion of Workers Employed at the At-Injury Employer, Permanent Partial Disability Claimants at Self-Insured Firms in California, 1993

Figure 5-3 essentially compares the retention of injured workers and comparison workers, excluding those who are not working at all in any given quarter. (The comparison group consists of workers who were working at the same time at the same employer and making approximately the same wages as the injured worker at the time of injury.)

In the three years before the quarter of injury, the proportion of injured workers and comparison workers working at the at-injury employer is almost identical because tenure was used for matching; therefore, the comparison workers were defined to have the same likelihood of being at the at-injury employer before the injury as the injured workers.[7] The proportion increases in the quarters prior to injury as workers begin employment at the employer; it is equal to 100 percent in the quarter of injury because, by definition, everybody is working at the employer of injury during the quarter of injury.

After injury, retention of injured workers and comparison workers continues to be very similar. As shown in Table 5-1, during the first five quarters after injury, retention is actually higher for injured workers than for controls. After 20 quarters, the retention of injured workers at the at-injury employers is slightly lower than comparison workers, with 4.1 percent fewer injured workers retained.

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[7] Wages were not used for matching prior to one year before injury. Therefore wages, unlike tenure, can be used to test the quality of the controls.

Figure 5-4 reports the retention of injured and comparison workers at insured firms. For this figure (and for the corresponding information in Table 5-1), the insured sample has been restricted to injured workers at the insured firms and their comparison workers who can be matched on tenure as well as wages. While this restriction reduces the sample, as discussed in Chapter 4 it also enhances comparability of retention between injured and comparison workers because it ensures that injured and comparison workers have comparable levels of attachment to the employer prior to injury.
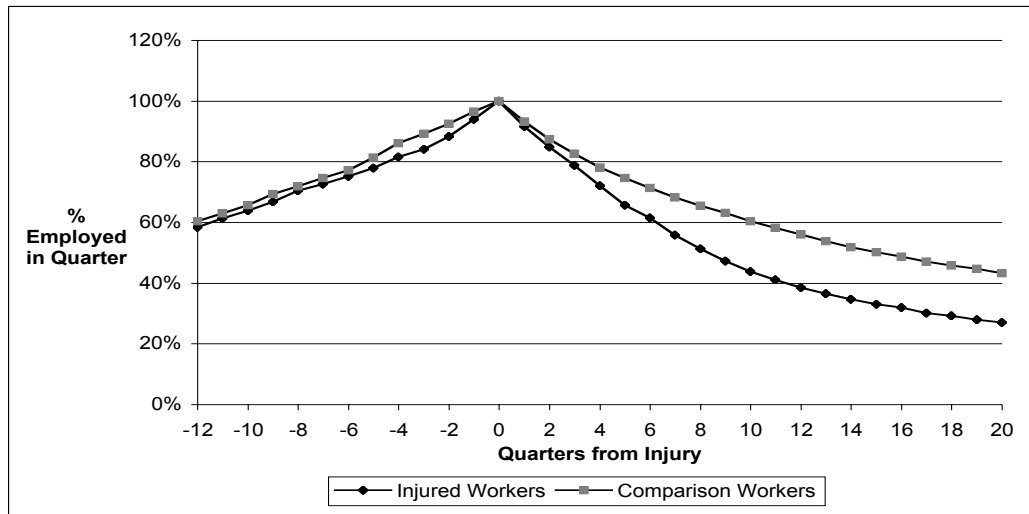
**Figure 5-4 Proportion of Working Claimants Employed at the At-Injury Employer,
Permanent Partial Disability Claimants at Insured Firms in California, 1993**

It is clear from Figure 5-4 and Table 5-1 that retention is considerably lower for workers injured at insured firms. By Quarter 20, retention among workers with claims at insured firms was almost 17 percentage points lower than retention among comparison workers. Because approximately 42 percent of comparison workers were retained by the at-injury employer, and only about 23 percent of injured workers were retained, this finding suggests that claimants, if they are working, are only about one-half as likely as uninjured workers to be retained by their employers.

Figure 5-5 demonstrates the value of returning to work for the at-injury employer. The figure shows the quarterly wages in each quarter for individuals working at the at-injury employer (PPD claimants at self-insured firms in 1993) and the quarterly wages for their controls at the at-injury employer. The level of quarterly wages of the injured and comparison workers appears to converge, suggesting that improved return to work among self-insured employers is likely to result in lower proportional wage loss. However, this result should be interpreted with caution because the retained employees are likely to have less serious injuries and this factor would also
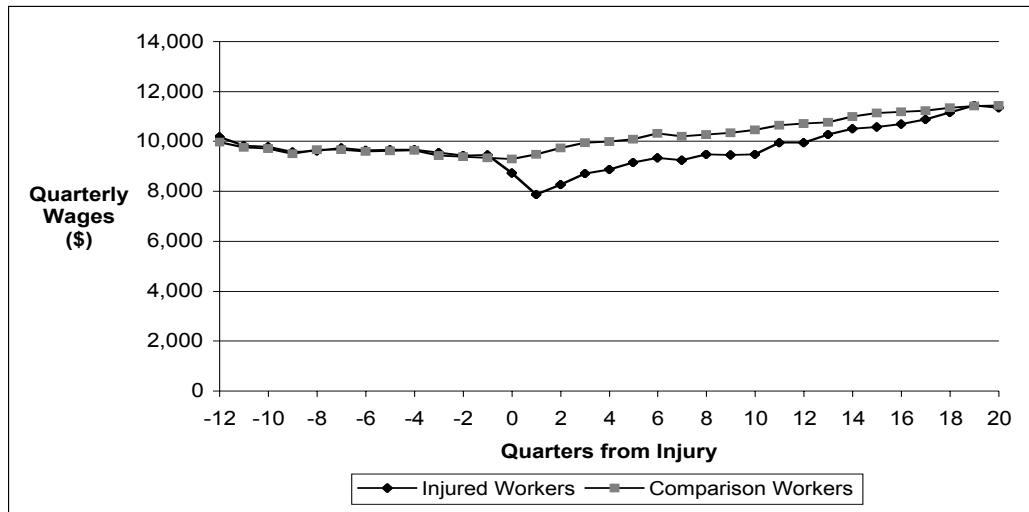
Figure 5-5 Wages at At-Injury Employer, Permanent Partial Disability Claimants

lead to lower losses. Estimating the causal effect of returning to the at-injury employer on proportional wage loss will be deferred to future work.

This chapter has demonstrated that by almost any measure, return to work at self-insured firms is higher than at insured firms, at least in the three years following injury. As will be shown in Chapter 7, much of this difference can be accounted for by differences between self-insured and insured firms in the pre-injury earnings of their employees and the number of workers they employ.

CHAPTER 6

RESULTS ON EARNINGS LOSSES AND REPLACEMENT RATES
BY SEVERITY OF INJURY

Over the years, California has developed a complicated formula used nowhere else that attempts to rank the severity of physical impairments in terms of their impact on workers (categorized by age and occupation). This ranking is done to ensure that those with the greatest loss of ability to compete in the labor market receive the largest compensation.

In particular, upon the worker s reaching permanent and stationary status, after which no further improvement is expected, a medical report is obtained with information on the impairment and in some instances a doctor s assessment of the need for work restrictions and an assessment of the worker s injury-associated pain is obtained. This information, along with the age and occupation of the worker, is then scaled and weighted to provide a disability rating that ranks workers by the severity of their disability so that the level of benefits can be set to compensate the appropriate fraction of their loss.[1]

By comparison, many other states take a much more rigid approach to compensating disability, emphasizing objective medical criteria for the determination of impairment, and typically ignoring work restrictions, pain, and pre-injury occupation.[2]

California s liberal construction of disability is controversial. On the one hand, if successful in targeting benefits to workers with a greater loss of ability to compete in the labor market, it may lead to greater equity. More workers with a disability (but without associated objective medical conditions) can receive benefits. Among those with a disability, if subjective and nonmedical factors are important and correctly scaled by the disability rating, then benefits will be distributed more effectively to those with the greatest losses, thereby achieving greater equity.

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[1] For example, for back injuries, the most common of the permanent partial disabilities in California, the disability rating gives a measure of a doctor s assessment of the seriousness of the injury. For instance, a 39-year-old claimant with a back injury precluding very heavy lifting will receive a rating of 10. If the injury precludes heavy work the rating is 30. If the injury results in a disability resulting in limitation to sedentary work, the rating is 70. In another example, the loss of a ring finger results in a rating of 6, while the loss of all five fingers on one hand leads to a rating of 55. The loss of hearing in one ear gets a rating of 15, while total deafness receives a rating of 60. Disability ratings below 20 are sometimes referred to as minor and ratings above 20 as major.

[2] See Barth and Niss (1999) for a discussion of permanent partial disability compensation in other states.

On the other hand, a larger fraction of workers receive PPD benefits in California, increasing costs to employers.[3] This increase in the number of PPD claims is the result of eligibility criteria that, lacking a means for objective testing, are often disputed. The increase in contested ratings compared to systems that rely on objective tests results in more frequent litigation and undermines confidence in the workers compensation system. If the ratings lead to more noise than signal, the California approach to rating disabilities may also undermine equity.

Earnings losses can provide a means to evaluate disability ratings, as discussed in Peterson et al. (1998). Because workers with greater diminished ability to compete in the labor market are likely to have larger earnings losses on average, the relationship between ratings and losses provides ex-post validation for the ratings. The ratings may then be said to have greater validity if higher ratings are associated with higher losses.

Peterson et al. showed that claims with disability ratings under 20 (approximately 60 percent of claims in 1993) had earnings losses that were lower than those for higher-rated claims. However, among those lower-rated claims, the disability ratings did not predict losses and therefore were not valid. The lowest-rated claims (disability ratings under 5) had losses that were at least as large, on average, as higher-rated claims. Because PPD benefits are set by the rating, replacement rates for the lowest-rated claims were very low—approximately 12 percent of earnings losses. This finding requires careful interpretation. It does not imply that low-rated claims have the highest uncompensated wage losses. In fact, high-rated claims have both the highest replacement rate and the highest uncompensated wage losses, as will be elaborated upon later in this chapter.

It is not possible to exactly replicate the findings of Peterson et al. using the self-insured data because disability ratings were typically missing in the data that employers in our sample provided to RAND.[4] Therefore, we adopted an alternative approach for this report. In particular, we use total indemnity incurred as a substitute for a disability rating. In addition to permanent partial disability benefits, total indemnity includes temporary disability and vocational rehabilitation maintenance allowance. Because more serious permanent disabilities are also likely

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[3] The proportion of indemnity claims receiving PPD benefits in California is 44 percent at self-insured employers and 43 percent at insured employers. In contrast, 18 percent of indemnity claims receive PPD benefits in Wisconsin, and in the state of Washington, 23 percent receive PPD benefits. See Biddle, Boden, and Reville (2000) for a comparison of Washington, Wisconsin, and California.

[4] Ratings were included on only approximately 25 percent of claims, and because the claims with rating information were concentrated at a few firms, it was not possible to generalize to the full sample of claims from this group.

to have longer periods of temporary disability and are more likely to receive vocational rehabilitation, total indemnity is a good proxy for a disability rating.[5]

Table 6-1 reports proportional earnings losses and replacement rates by total indemnity quintile[6] for injuries occurring at self-insured employers in 1993 and 1995. The results for 1993 are reported before tax for five years of losses, and both the 1993 and 1995 results are projected to ten years of after-tax losses. The 1993 five-year, before-tax results are also summarized in Figure 6-1. For readers who are more accustomed to disability ratings, the median disability rating in the insured data associated with the first (0–20) quintile of total indemnity in 1993 is 5, the second is 10, the third is 17, the fourth is 25, and the fifth is 45.

Table 6-1

Earnings Losses and Replacement by Indemnity Quintile, Self-Insured Employers, 1993 and 1995

Year of Injury	Indemnity Quintile	Earnings Losses ($)	Potential Uninjured Earnings ($)	Total Indemnity ($)	Propor. Wage Loss	Replace. Rate
Before-Tax, 5 Years of Losses						
	0–20	14,621	167,467	2,159	0.087	0.148
	21–40	11,076	172,000	6,787	0.064	0.613
1993	41–60	29,829	172,562	13,909	0.173	0.466
	61–80	48,958	163,812	27,013	0.299	0.552
	81–100	93,098	168,549	45,482	0.552	0.489
Projected After-Tax, 10 Years of Losses						
	0–20	18,730	230,031	2,159	0.081	0.115
	21–40	13,938	236,121	6,787	0.059	0.487
1993	41–60	40,329	238,364	13,909	0.169	0.345
	61–80	65,290	225,932	27,013	0.289	0.414
	81–100	128,339	235,186	73,294	0.546	0.571
Projected After-Tax, 10 Years of Losses						
	0–20	12,146	242,148	1,676	0.050	0.138
	21–40	15,453	245,715	6,061	0.063	0.392
1995	41–60	34,406	247,149	12,984	0.139	0.377
	61–80	58,438	236,377	25,512	0.247	0.437
	81–100	126,514	245,680	68,650	0.515	0.543

Table 6-1 shows that the largest losses are in the highest (fifth) quintile. Total losses for claimants (before tax, five years of losses) in the fifth quintile are $93,098, a proportional

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[5] For 1993 injuries, the correlation between disability rating and total indemnity incurred in the WCIRB data was 0.68. Table A-6 in Appendix A shows total indemnity figures according to disability ratings.

[6] Quintiles divide the sample into five equally sized groups by percentile. The first quintile is the 1 to 20 percentile, the second is the 21 to 40 percentile, and so forth.

earnings loss of 55 percent. The smallest losses, $11,076, are in the second quintile, with somewhat higher losses of $14,621 observed in the first quintile. In 1995, the highest losses are in the fifth quintile and the lowest losses are in the first quintile. Overall, the relationship between total indemnity and total losses suggests that, except perhaps for the lowest two quintiles, benefit allocation (presumably determined by ratings) for the self-insured employers is valid.

A related question concerns the equity of benefits across indemnity categories. Equity can be measured by replacement rates or by uncompensated wage loss. Berkowitz and Burton (1987) argued that equity requires that replacement rates either increase or decrease consistently with disability.[7] A decision to compensate a larger fraction of losses for workers with a greater disability would lead to consistently increasing replacement rates.

The evidence in Table 6-1 suggests that this equity condition is violated at both five and ten years in 1993 and at ten years in 1995. The second quintile often has replacement rates higher than either the first or third quintile. This result differs from the result in Peterson et al., in which the lower-rated claims consistently had lower replacement rates than the higher-rated claims.
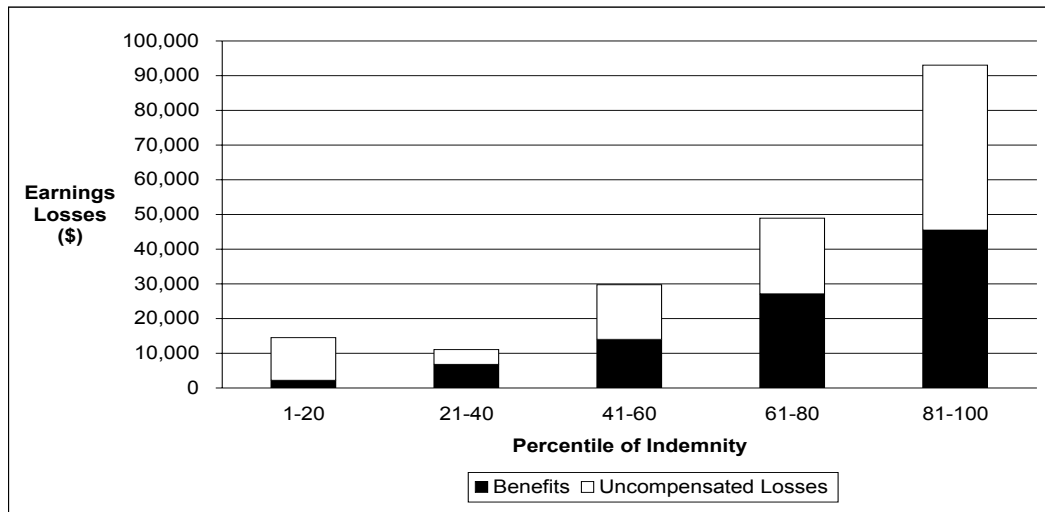
Figure 6-1 Earnings Losses at Five Years by Indemnity Quintile, Self-Insured Firms, 1993 Injuries

As in Peterson et al., the lowest indemnity quintile has the lowest replacement rate as shown in Figure 6-1 and Table 6-1, where the fraction of total losses that is uncompensated is largest for the lowest quintile. Of the total before-tax losses of $14,621 in the first quintile, only

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[7] This is an example of *vertical equity*. Berkowitz and Burton (1987) suggested another measure of equity, which they referred to as *horizontal equity:* Similar workers should be compensated equally. For example, injuries that on average lead to equal losses should result in equal benefits. We will be examining this issue in a future report.

$2,159 is received in benefits, resulting in a replacement rate under 15 percent. For this lowest-indemnity category, the replacement rates are lowest for 1995 as well.

As noted in Chapter 2, differences in replacement rates may not be the ideal measure for whether any category of claimants is undercompensated. For instance, if policymakers want to replace a greater fraction of the losses incurred by the most seriously disabled, then the lowest indemnity category will have a lower replacement rate by design.

An alternative test involves examining uncompensated wage losses. The lower portion of each bar in Figure 6-1 represents the average total benefits received after five years, and the upper portion of each bar represents the uncompensated wage losses. In addition to having the highest earnings losses, the fifth quintile also has the highest uncompensated wage losses. While they received benefits in excess of $45,000 over the five years after injury on average, workers in the fifth quintile had losses on average that are almost twice that amount. Therefore, uncompensated loss totals almost $50,000. After ten years, projected uncompensated losses before tax are more than $100,000. Uncompensated losses for the first quintile are higher than the second quintile losses in both 1993 and 1995, but lower than the three highest quintiles.

Table 6-2

Earnings Losses and Replacement by Indemnity Quintile, Insured Firms

Year of Injury	Indemnity Quintile	Earnings Losses ($)	Potential Uninjured Earnings ($)	Total Indemnity ($)	Propor. Loss	Replace. Rate
Before-Tax, 5 Years of Losses						
	0–20	14,654	97,817	1,696	0.150	0.116
	21–40	17,818	99,897	5,689	0.178	0.319
1993	41–60	26,320	103,452	12,392	0.254	0.471
	61–80	37,043	102,224	24,588	0.362	0.664
	81–100	69,938	113,881	43,638	0.614	0.624
Simulated After-Tax, 10 Years of Losses						
	0–20	18,593	143,117	1,696	0.130	0.091
	21–40	22,427	144,034	5,689	0.156	0.254
1993	41–60	32,866	149,934	12,392	0.219	0.377
	61–80	42,899	148,258	24,588	0.289	0.573
	81–100	87,378	163,396	61,622	0.535	0.705
Simulated After-Tax, 10 Years of Losses						
	0–20	18,307	155,570	1,994	0.118	0.109
1995	21–40	22,792	166,146	5,997	0.137	0.263
	41–60	34,355	163,733	12,997	0.210	0.378
	61–80	54,544	157,512	27,179	0.346	0.498
	81–100	103,242	176,233	62,647	0.586	0.607

Table 6-2 shows estimates by indemnity quintile for PPD claimants at insured firms in 1994. As in Peterson et al. (1998), and as with the self-insured employers, replacement rates are lowest in the first quintile, and earnings losses and uncompensated losses are highest in the fifth quintile.

Comparing the self-insured and the insured firms, proportional wage losses are lower in every quintile at the self-insured firms, suggesting that return to work at the self-insured firms for all levels of injury severity surpasses the return to work at insured firms. However, while replacement rates for lower-indemnity claims are higher at the self-insured firms, replacement rates for higher-indemnity claims are higher at the insured firms. These results suggest that the lower average replacement rate overall at self-insured firms is driven by lower replacement rates among the most seriously disabled. This issue is explored further in Chapter 7.

CHAPTER 7

**EXPLAINING THE DIFFERENCES: THE IMPACT OF FIRM SIZE AND
PRE-INJURY EARNINGS ON WAGE LOSS AND REPLACEMENT RATES**

Two significant differences exist between the self-insured and insured firms the number of employees they have and the level of pre-injury earnings of their workers. In this chapter, we explore the differences in wage loss and replacement rates by firm size and by pre-injury earnings *within* the self-insured and insured firms.

This analysis has a twofold purpose: First, we wish to investigate whether subpopulations by firm size or pre-injury earnings reveal adequacy issues. Second, we wish to investigate whether differences in firm size or earnings *within* the self-insured and insured groups result in patterns of wage loss and replacement that are similar to the patterns revealed when insured and self-insured firms are compared.

This chapter concludes with a discussion of analyses (reported in more detail in Appendix A) that compare similarly sized and equal-paying firms that differ only in their insurance status.

Table 7-1 shows earnings losses and replacement rates for 1993 injuries at self-insured and insured employers by firm size quartile (number of employees).[1] Firm size by the average number of employees within each quartile is reported in the first column of the table. As has been noted previously in this report, the size difference between self-insured and insured firms is clear. An average-size firm within the quartile of largest insured employers is still smaller than every self-insured firm except those in the quartile of smallest firms. At the 25th percentile, the size of self-insured firms is 4,705 employees (with the quartile below that having an average size of 1,715 employees), whereas at the 75th percentile insured firms have only 393 employees (with the top quartile having an average of only 3,932 employees).

If the lower proportional earnings losses at self-insured firms are in part attributable to firm size, we would expect to find that within both the self-insured and the insured firms proportional losses would be smaller the larger the employer. The information in Table 7-1 confirms this prediction, except that when moving from the lowest to the second lowest quartile of self-insured firms, increased firm size consistently leads to lower proportional earnings losses. However, self-insured firms in the lowest quartile in terms of size, which includes firms that on

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[1] The quartiles with the fewest number of employees represent firms that fall below the 25th percentile in terms of firm size, the quartiles with the second fewest number of employees represent firms between the 25th and 50th percentiles in terms of size, and so forth.

average are smaller than the largest insured firms, still have lower proportional losses, suggesting that firm size does not account for all differences in proportional losses between the self-insured and insured firms.

Table 7-1

Earnings Losses and Replacement Rates by Firm Size Quartile, Self-Insured and Insured Employers, 1993 Injuries

Average Firm Size (Number of Employees)	5-Year Earnings Losses ($)	5-Year Potential Uninjured Earnings ($)	Indemnity Paid by Year 5 ($)	5-Year Propor. Losses	Replacement Rates		
					5-Year Pre-Tax	5-Year After-Tax	10-Year After-Tax
Self-Insured							
1,715	36,024	136,703	19,139	0.264	0.531	0.695	0.497
11,019	34,056	123,410	17,812	0.276	0.523	0.680	0.468
25,469	49,822	218,521	21,476	0.228	0.431	0.576	0.458
52,690	33,749	187,978	16,566	0.180	0.491	0.666	0.414
Insured							
21	34,050	96,712	17,623	0.352	0.518	0.666	0.486
73	33,591	103,126	16,779	0.326	0.500	0.645	0.475
219	31,669	98,331	16,978	0.322	0.536	0.695	0.547
3,932	33,555	115,290	19,038	0.291	0.567	0.741	0.573

Figure 7-1 illustrates the impact that firm size has on patterns of earnings losses following injury. (This figure expands upon Figure 5-1 in Chapter 5). Figure 7-1 shows the ratio of the earnings of injured workers to comparison workers before and after injury at insured and self-insured employers. Within each insurance class, the earnings pattern is shown for the smallest and largest quartile. Smaller firms reveal a more significant decline in earnings of injured workers relative to controls.

Table 7-1 does not reveal a consistent relationship between firm size and replacement rates. This inconsistency may result because larger firms typically pay higher wages (see, for example, Troske, 1999) and the positive effects of employer size on return to work are combined with the negative effect that higher earnings have on replacement rates. That is, although higher wages would result in fewer earnings being replaced (due to indemnity caps and other factors), this decrease in replacement rate is mitigated to some degree by the better return to work at larger firms.

In Table 7-1, the relationship between firm size and earnings can be observed by examining the pattern in potential uninjured earnings (the earnings of the comparison workers over the five years after injury). Potential uninjured earnings do not increase consistently with employer size. Nevertheless, among the self-insured firms, the two quartiles with the largest employers have higher earnings than the two quartiles with the smallest employers, and among

the insured firms, the quartile with the largest employers has the highest potential uninjured earnings and the quartile with the smallest employers has the lowest.
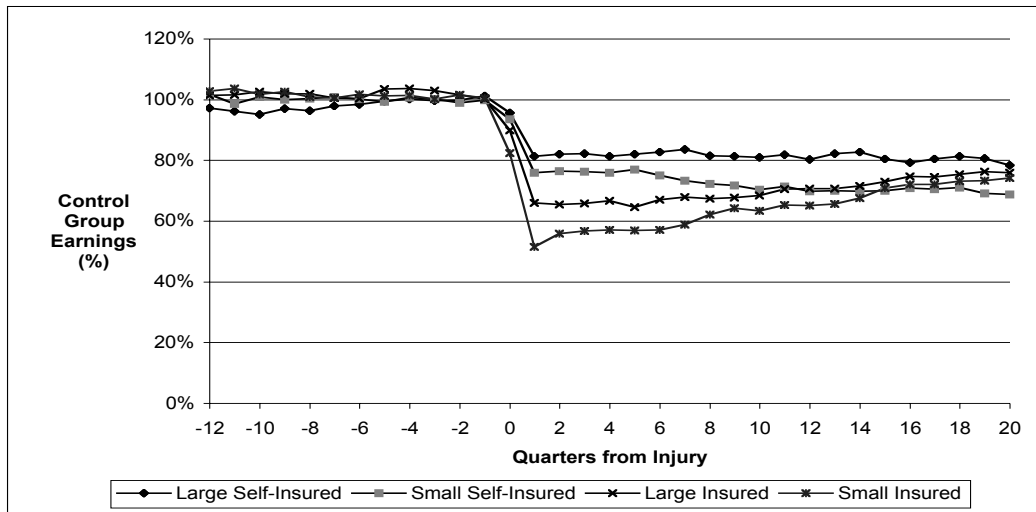
Figure 7-1 Employee Earnings Before and After Injury by Firm Size, Relative to Earnings of Control Group, Self-Insured and Insured Firms, 1993

Table 7-2 illustrates an analysis of pre-injury earnings that is similar to the analysis regarding firm size in Table 7-1. Table 7-2 shows earnings losses and replacement rates for 1993 injuries at self-insured employers by quartiles of pre-injury earnings.[2] Quartiles are defined by the earnings distribution at self-insured firms, and not the full population of injured workers (including insured firms). Table 7-2 further divides the population of self-insured claims into low-rated (below the median indemnity) and high-rated (above the median indemnity) claims.

The quartile with the lowest earnings (low earners or claimants with quarterly earnings below $5,663 in the quarter prior to injury) experienced earnings losses over the five years after injury of $31,170. This amount represents a proportional loss of 38.4 percent, as shown in Table 7-2.

The quartile with the highest earnings (high earners or claimants with quarterly earnings above $12,119 in the quarter prior to injury) experienced earnings losses over the five years after injury of $50,841. This amount represents a proportional loss of 18.4 percent, which is considerably lower than the proportional loss for the low earners. Nonetheless, because the two groups each received approximately $18,000 total indemnity over the five years after injury, and the absolute losses were higher for the high earners, the pre-tax replacement rate for the high

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[2] The lowest quartile (the 0—25 percentile) represents workers with pre-injury quarterly earnings below the 25th percentile, the second-lowest quartile represents workers with pre-injury quarterly earnings between the 25th and 50th percentile, and so forth.

earners was only 36.7 percent, which is significantly lower than the 58.1 percent replacement rate of the low earners.

Table 7-2

Earnings Losses and Replacement Rates by Pre-Injury Earnings Quartile, Self-Insured Employers, 1993 Injuries

Pre-Injury Earnings Percentile (within group)	5-Year Earnings Losses ($)	5-Year Potential Uninjured Earnings ($)	Indemnity Paid by Year 5 ($)	5-Year Propor. Loss	Replacement Rates		
					5-Year Pre-Tax	5-Year After-Tax	10-Year After-Tax
Self-Insured, All Claims							
0—25	31,170	81,136	18,121	0.384	0.581	0.740	0.494
25—50	36,715	130,828	20,348	0.281	0.554	0.725	0.528
50—75	39,751	188,722	19,312	0.211	0.486	0.650	0.466
75—00	50,481	274,841	18,522	0.184	0.367	0.499	0.385
Self-Insured, Low-Rated Claims (Total Indemnity Below Median)							
0—25	17,872	78,623	5,477	0.227	0.306	0.391	0.197
25—50	15,113	131,340	5,827	0.115	0.386	0.515	0.289
50—75	13,902	186,958	6,282	0.074	0.452	0.615	0.317
75—100	14,247	277,455	5,977	0.051	0.419	0.595	0.474
Self-Insured, High-Rated Claims (Total Indemnity Above Median)							
0—25	44,713	83,696	30,998	0.534	0.693	0.882	0.627
25—50	56,326	130,364	33,531	0.432	0.595	0.775	0.585
50—75	64,720	190,426	31,898	0.340	0.493	0.657	0.499
75—100	91,061	271,914	32,573	0.335	0.358	0.483	0.375

If the differences in earnings losses and replacement between the self-insured and insured groups were in part attributable to pre-injury earnings, comparing earnings losses and replacement for low earners to high earners at the self-insured employers should reveal patterns that are similar to comparing earnings losses and replacement across insurance classes. Table 7-2 shows that a comparison across pre-injury earnings groups reveals patterns of earnings loss and replacement that mirror the comparison in earnings loss and replacement between self-insured and insured firms. Although workers with higher earnings have losses that are higher in absolute terms, their proportional losses are lower. Benefits do not vary by earnings quartile. Replacement rates decline with increases in pre-injury earnings.

Table 7-2 also divides the sample of claims into low-indemnity claims (below the median of $13,595 total indemnity) and high-indemnity claims (above the $13,595 median). Within each indemnity category, losses and replacement are reported by earnings quartile (defined using the same percentiles as the overall estimates in the All Claims group).

The general pattern in proportional earnings losses continues to hold: The higher the earnings, the lower the proportional losses. The patterns in replacement rates are much more

difficult to summarize. Among high-indemnity claims but not among low-indemnity claims, replacement rates fall with income. However, the two lowest replacement rates at five years are for the lowest earnings quartile of low-indemnity claims (31 percent pre-tax replacement) and the highest earnings quartile of high-indemnity claims (36 percent pre-tax).

Table 7-3 regarding claims at insured firms in 1993 reports the same general information as Table 7-2 regarding self-insured firms. In general, no particular pattern in proportional earnings losses emerges across earnings quartiles at insured firms. However, the pattern in replacement rates is striking: Workers with higher earnings have lower replacement rates. Workers in the lowest earnings quartile, with pre-injury quarterly earnings averaging below $3,284, have $16,278 in losses at five years and $14,703 in benefits (indemnity paid by Year 5), and their pre-tax replacement rate at five years is over 90 percent. In sharp contrast, workers in the highest earnings quartile, with quarterly earnings above $7,950, have a replacement rate of only 37.4 percent.

Table 7-3

Earnings Losses and Replacement Rates by Pre-Injury Earnings Quartile, Insured Employers, 1993 Injuries

Pre-Injury Earnings Percentile (within group)	5-Year Earnings Losses ($)	5-Year Potential Uninjured Earnings ($)	Indemnity Paid by Year 5 ($)	5-Year Propor. Loss	Replacement Rates		
					5-Year Pre-Tax	5-Year After-Tax	10-Year After-Tax
Insured, All Claims							
0—25	16,278	49,473	14,703	0.329	0.903	1.120	0.837
25—50	24,818	71,098	16,801	0.349	0.677	0.801	0.609
50—75	38,382	109,466	19,019	0.351	0.496	0.595	0.482
75—100	53,146	183,745	19,889	0.289	0.374	0.456	0.410
Insured, Low-Rated Claims (Total Indemnity Below Median)							
0—25	8,439	46,424	4,898	0.182	0.580	0.715	0.496
25—50	13,780	70,091	4,850	0.197	0.352	0.445	0.309
50—75	22,204	112,113	5,069	0.198	0.228	0.298	0.180
75—100	27,023	187,947	5,122	0.144	0.190	0.253	0.147
Insured, High-Rated Claims (Total Indemnity Above Median)							
0—25	26,567	53,475	27,570	0.497	1.038	1.290	0.975
25—50	36,638	72,177	29,599	0.508	0.808	1.014	0.715
50—75	52,342	107,182	31,056	0.488	0.593	0.766	0.599
75—100	74,684	180,281	32,064	0.414	0.429	0.570	0.493

Table 7-3 also divides claims by total indemnity above and below the median of $12,038. Low-indemnity claims show very low replacement rates. High-indemnity, low-earnings claims have the highest replacement rate observed in any category almost full wage replacement even at 10 years (after-tax). The pattern of declining replacement rates with increased earnings is

evident in both the above-median and below-median claims. Therefore, in the high-indemnity category, low-earnings claims have a high replacement rate, while the highest-earnings claims have a replacement rate comparable to the low-indemnity categories.

In both Tables 7-2 and 7-3, it is clear that proportional losses are considerably higher for the high-indemnity claims. It may be that policymakers intend for there to be differences in replacement rates when two groups of injured workers have different proportional losses. As noted in Chapter 2, an alternative measure of adequacy that allows for differences in replacement rates for injured workers with different losses is uncompensated earnings losses (or losses remaining after benefits are paid).

Figure 7-2 reports uncompensated earnings losses for insured and self-insured claims, above and below the median indemnity, and by pre-injury earnings quartile. The data are taken from the bottom two panels of Table 7-3 and Table 7-4, with uncompensated losses estimated by subtracting indemnity from five-year earnings losses.

In three of the four self-insured and insured groups shown in Figure 4-2, uncompensated losses increase with pre-injury earnings percentiles. The exception to this pattern is low-indemnity claims at self-insured firms, which show no particular relationship between uncompensated losses and the pre-injury earnings quartile.
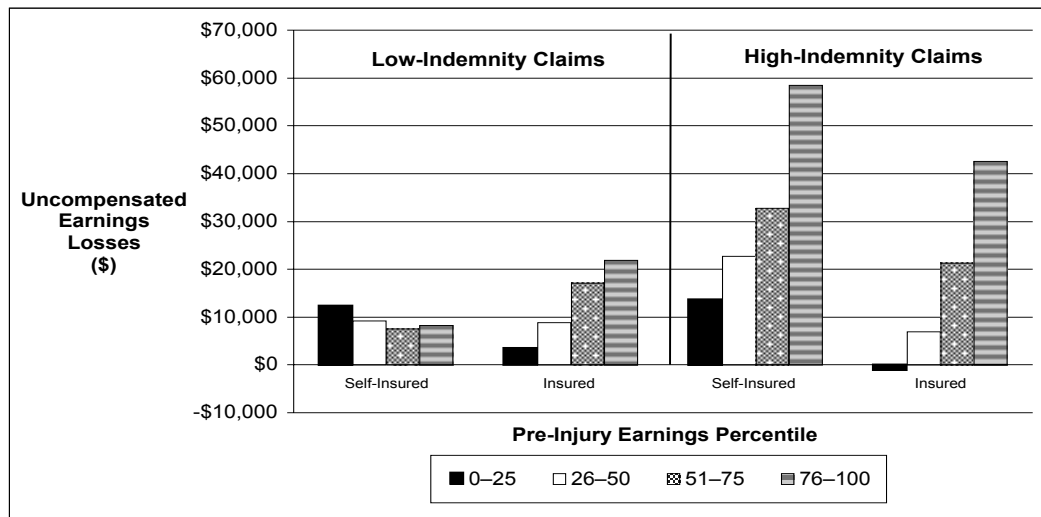
Figure 7-2 Pre-Tax Uncompensated Wage Losses by Quartile of Pre-Injury Earnings, High-Rated and Low-Rated Claims, 1993 Injuries After Five Years

An examination of Table 7-2 reveals that the highest two earnings quartiles among the low-indemnity claims at self-insured firms have extremely low proportional earnings losses: 7.4 percent for the third quartile, and 5 percent for the fourth quartile. Because high-earning, less-disabled claimants are likely to be the quickest to return to work and the easiest to accommodate, and self-insured employers are more likely to be able to accommodate them, uncompensated

losses are relatively low for even the high-earnings claims among the less-disabled (low-indemnity) claimants.

The outcomes for high-earning, less-disabled claimants best exemplify the relative successes of the self-insured firms: Proportional losses are low and uncompensated losses, as a fraction of potential uninjured earnings, are very low. The highest-earners among low-indemnity claims at the self-insured firms lose only 3 percent of potential uninjured earnings.

Figure 7-2 shows that the high-indemnity claims in the lowest quartile of pre-injury earnings at insured firms are compensated in excess of 100 percent (that is, uncompensated losses of less than $0). Despite losing approximately 50 percent of earnings, the indemnity paid over the five years after injury exceeds the losses experienced.

The uncompensated losses of the high pre-injury earnings, high-indemnity claimants at both the self-insured and the insured firms are notable. At the self-insured firms, claims in the top quartile of pre-injury earnings have uncompensated losses of $58,488 over the five years after injury. At the insured firms, claims in the top quartile of pre-injury earnings have uncompensated losses of $42,619. An examination of these two groups reveals the weaknesses of the workers compensation system. Because they tend to be the more disabled claimants, they are harder to accommodate, even at the self-insured firms. In addition, as high-earnings claimants, they are subject to caps, and receive benefits that are no greater than those for other earnings categories, despite considerably higher losses in absolute terms. Whether the outcomes for this group are measured by replacement rates or by uncompensated losses, the results seem to be the least adequate of all the claims groups.

The results discussed in this chapter suggest that differences between the self-insured and the insured firms in pre-injury earnings and firm size may account for many of the differences observed in proportional losses. However, in the tables and figures shown in this chapter, we controlled for one characteristic, such as firm size, without controlling for the other differing characteristics of self-insured firms and insured firms. Therefore, the results only suggest that firm size and pre-injury earnings can explain the differences in earnings loss and replacement rates between self-insured and insured employers.

In Appendix A, we report the results of a multiple regression analysis that simultaneously controls for multiple factors that may determine proportional losses. The results of the regression analysis of differences between insured and self-insured firms in proportional wage loss are summarized in Figure 7-3. The figure shows the results for all PPD claims from 1993 through 1995 pooled and the results broken out separately for 1994. The full regression results are reported for these years in Table A-7, in Appendix A, and broken out for 1993 and 1995 in Table A-8 in Appendix A.
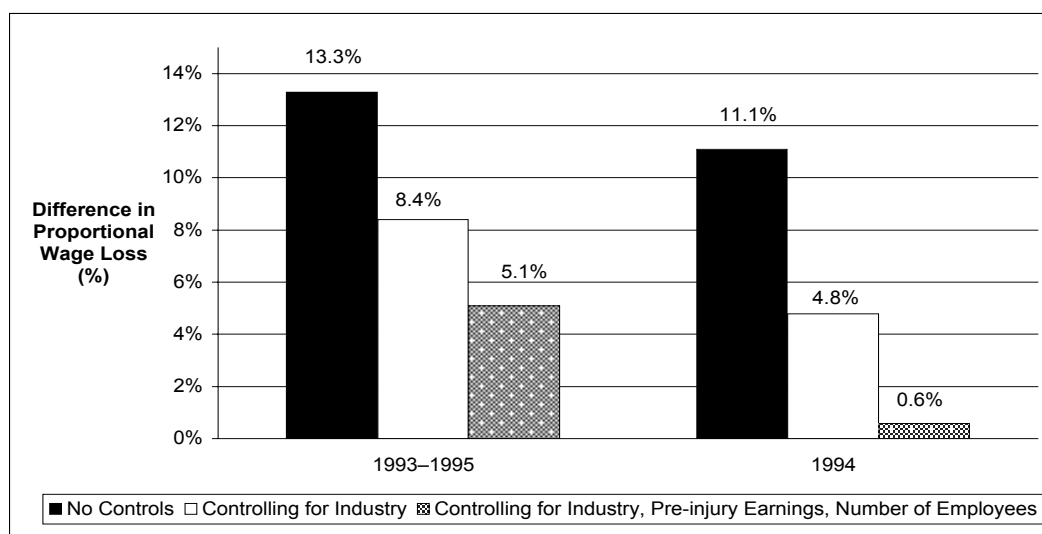
Figure 7-3 Differences in Proportional Wage Loss Between Insured and Self-Insured Claims, Before and After Controlling for Employer Characteristics

Without controlling for any of the differences between self-insured and insured claims, the full predicted values for proportional wage losses from the regression for 1993 through 1995 claims are 0.21 for self-insured claims and 0.343 for insured claims. Therefore, the difference of 0.133, or 13.3 percent, is reported in the left-hand chart in Figure 7-3. The middle bar of the 1993—1995 group shows the difference in proportional wage losses between claims at insured firms and self-insured firms after controlling for the differences in industry composition between the two samples. This amount is 0.084, or 8.4 percent.

In other words, when comparing an insured firm and a self-insured firm in the same industry (without controlling for other factors such as pre-injury earnings and number of employees), proportional wage losses in the insured sector would be 4.9 percentage points lower than if the differences in industry sector had been ignored.[3] The right-hand bar in the 1993—1995 group shows the difference after controlling simultaneously for industry, pre-injury earnings, and number of employees. That is, when comparing two firms that are in the same industry, and have the same average earnings and the same number of employees, insured firms proportional wage loss would still be higher by 0.051, or 5.1 percent.

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[3] Public utilities (communications, water, and power) account for a large part of the difference in proportional wage losses. This industry is predominantly self-insured and has very low proportional wage losses.

Figure 7-3 also shows the differences in proportional wage losses for the 1994 period because the results for that sample suggest that after controlling for industry, pre-injury earnings, and the number of employees, no difference exists in proportional wage losses between insured and self-insured firms. Therefore, solid conclusions about the relative value of self-insurance per se are unwarranted. Nonetheless, the results provide some evidence that if similar claims that occur at insured firms would have occurred at self-insured firms instead (or if, for instance, insured firms faced a greater degree of experience rating [e]), outcomes for the injured workers at the self-insured firms may be better.

CHAPTER 8

SUMMARY AND IMPLICATIONS FOR ADEQUACY OF COMPENSATION

As part of the comprehensive review of workers compensation permanent partial disability benefits by the California Commission on Health and Safety and Workers Compensation, this report investigated the long-term economic consequences of a disabling injury, the success of return to work, and the adequacy of compensation at private, self-insured employers in California.

The analysis in this report responds to stakeholder comments on an earlier report (Peterson et al., 1998) that showed significant and sustained wage losses, as well as low wage replacement rates, over the five years after injury at insured firms in California in 1991. Data on self-insured firms were previously unavailable, but anecdotal evidence and economic theory suggested that self-insured employers would in most cases have better return to work than insured employers, which would lead to improved outcomes for PPD claimants. The data for this report are derived from a unique database of private claims data gathered from 68 employers and then linked to state administrative wage data.

We find that PPD claimants at private, self-insured employers in 1991 through 1995 experience significant earnings losses over the five years after injury. However, we also find that there is better (that is, more sustained) return to work at self-insured employers. PPD claimants at self-insured firms are more likely to continue to work during the quarters after injury, less likely to drop out or retire, and if employed, more likely to work at the at-injury employer. Improved return to work implies lower proportional earnings losses at self-insured firms than at insured firms. In particular, we find that whereas PPD claimants in 1993 at insured firms lost 32 percent of their earnings over the five years after injury, PPD claimants at self-insured firms lost only 23 percent of their earnings.

Despite more sustained return to work and lower proportional losses at self-insured firms, we find that workers compensation replaces an equal or lower fraction of losses at the self-insured firms than at the insured firms. This result is surprising because lower proportional wage loss should suggest higher replacement rates. The difference is that claimants at self-insured firms have 50 percent higher earnings on average, and therefore higher absolute losses ($39,500 over the five years after injury at the self-insured firms, compared with $33,000 at the insured firms). At the same time, total benefits are largely unrelated to earnings (due to benefit caps).

The result is that claimants at self-insured employers have 48 percent of their pre-tax losses replaced, compared with 53 percent at the insured employers. A commonly applied

standard for adequacy is that two-thirds of pre-tax earnings should be replaced. These findings suggest that workers compensation benefits for permanent partial disability claimants in California are not adequate.

We identified the same pattern of replacement rates across pre-injury earnings groups within the self-insured and the insured groups: Workers with higher earnings had replacement rates considerably lower than workers with lower earnings. For instance, the bottom quartile of wage earners at the insured firms had a replacement rate of 90 percent, compared with the replacement rate of 37 percent for the top quartile. At the self-insured firms, the bottom and top quartile of wage earners had replacement rates of 58 percent and 36 percent, respectively. These differences across earnings groups at the insured and self-insured employers, and similar differences across employer groups by size, suggest that the differences between the self-insured and the insured claims can largely be explained by differences in firm size and pre-injury earnings of claimants.

As was described in Peterson et al. (1998), we also found lower replacement rates among the lowest-indemnity (low-rated) claims at both insured and self-insured firms. The lowest-rated 20 percent of indemnity claims had 14 percent of earnings losses replaced at the self-insured firms and 11 percent of earnings losses replaced at the insured firms. This result did not extend to all lower-rated claims at the self-insured firms. The second-lowest-rated 20 percent of indemnity claims had 61 percent of earnings loss replaced at the self-insured and 32 percent replaced at the insured firms.

In general, we found better outcomes for low-rated claims at the self-insured than at the insured firms. We particularly found better outcomes for higher-earnings, low-indemnity PPD claims at self-insured firms, which had very high rates of return to work and very low proportional earnings losses (only 5 to 7 percent). This group, which is perhaps the easiest to accommodate and the most securely attached to the labor force, best exemplifies the success of return to work at employers with self-insured status.

The questions and issues raised by the results of this study on adequacy of compensation do not lend themselves to simple solutions. For instance, one solution to the inadequacy of compensation among some claimant groups could be to raise benefits for low-rated claims. While low replacement rates are observed among low-indemnity (low-rated) claims, this association does not necessarily imply that uncompensated losses are high in this group. In particular, by many alternative measures of adequacy, high-earnings/low-indemnity claims at self-insured firms, for instance, are in fact well compensated.

Another solution to the problem of inadequacy of benefits would be to increase compensation for the high-rated claims. However, once again, by any reasonable measure, the

lowest pre-injury earnings, high-indemnity claims at firms with insured status are well compensated, with replacement rates in excess of 100 percent over the five years after injury. Raising caps to target high-earnings claimants would, again, raise benefits for one of the workers compensation successes workers with low-indemnity claims and high earnings at self-insured firms.

The lack of a simple solution to the patterns of inadequacy observed in the data should not stand in the way of policymakers addressing clear issues of inadequacy (such as high uncompensated losses among high-indemnity, high-wage earners) and inequity (such as low replacement rates among the lowest-rated claims, particularly at insured employers).

But while fine-tuning the compensation may be appropriate in the short run, the lack of clear-cut policy levers to equitably improve compensation suggests that more fundamental solutions than fine-tuning need to be considered. In particular, further effort is required to improve return to work, particularly among smaller firms. In addition, disability ratings, which determine most of the differences in compensation among claimants, need to be revised to more accurately target individuals with greater losses. Alternative approaches to setting benefits should be considered, such as increasing benefits for workers who do not receive an offer of return to work. Finally, if the resulting approach to setting compensation is more consistent than the current structure, it could reduce litigation and help restore confidence in the workers compensation permanent partial disability system.

APPENDIX A

TECHNICAL APPENDIX

This appendix provides additional information about the data collected for this study and further information on several analyses summarized in the body of this report. We describe the sampling strategy used for contacting and requesting data from self-insured employers, and the characteristics of employers that are associated with nonresponse. We describe the data cleaning and the construction of an analysis database from the 168 firms that responded to our request for data, and provide information on the number of comparison workers per injured worker for both the insured and self-insured employer databases.

We also provide information about the relationship between disability ratings and total indemnity to improve the interpretation of the results on the impact of severity reported in Chapter 6, and report the method for constructing nonresponse weights used in Chapter 4. We describe in detail the method used to adjust total indemnity to make the time period of the indemnity payout consistent with the time period of losses available from the wage data and also describe the method used to simulate after-tax earnings. Finally, we report details on the regression analysis used in Chapter 7 to control for differences between self-insured firms and insured firms.

SAMPLING

Table A-1 shows how the population of self-insured employers was divided into strata, and the number sampled in each strata. We sampled a total of 150 private self-insured employers.

We wanted the database to be a sample of claims and not a sample of firms. To do this, the probability of selection for any firm was weighted by the number of claims at the firm. This weighting implies that larger firms would be more likely to be selected. However, we also wanted to have representation from firms of all sizes. Therefore, we stratified by firm size, as shown in Table A-1. In addition, we stratified according to whether the employer had switched its TPA on the assumption that we could more easily obtain data from employers who were continuously with the same TPA.

DATA CLEANING AND CHECKING

We received our data from the self-insured firms from June through August 1998, with most of the data received during June and July. In several cases, problems were immediately

identified by RAND staff after the data arrived, and the employers or the TPA were sent new files. During this period, a RAND staff member fielded calls daily from employers and TPAs who had questions, logged incoming data, and organized the files on a secure computer for processing by the programmer.

Table A-1

Strata for Sampling Self-Insured, Private Employers

	Number of Cases	Number of Employers	Sample Size
Did Not Change TPA	0—99	38	3
	100—199	27	5
	200—299	24	7
	300—499	17	8
	500—699	21	14
	700—999	18	16
	1,000+	72	72
Total		217	125
Changed TPA	0—99	13	1
	100—199	22	1
	200—299	22	1
	300—499	39	1
	500—699	29	1
	700—999	35	2
	1,000—1,499	24	2
	1,500—1,999	9	1
	2,000—2,999	21	3
	3,000—3,999	11	2
	4,000—5,999	14	4
	6,000+	10	6
Total		249	25

The data files were supplied using various media, including e-mail attachments, floppy disks, and tapes. Many were written in MS Excel and a few were in dBase; the others were text files formatted into columns, or comma delimited, and some were in multi-line report format. Many came without written documentation of the information on the computer file and some files were completely lacking column headings.

Each file type had to be handled differently for conversion. For instance, Excel and dBase files were converted using special software. The conversions were then quality-checked and the variable names and formats were made consistent in order to be merged into a single file for analysis of all the self-insured claimants. The data that arrived lacking headings or documentation were particularly troublesome. Many were missing requested variables or included additional variables that hadn t been requested, and there was no automatic way to determine the identity of

missing or additional variables. The programmer examined each variable in all the files, looking for patterns across variables, and if any questions remained called the data providers for the answers.

Here s a sampling of the types of problems we faced:

- Dates were in various formats (for example, 03/95, 03-15-95, 03-15-1995, 950315).
- Social Security numbers were in various formats (for example, 123456789, character, or numeric, 123-45-6789).
- Dollar amounts were expressed in variety of ways (for instance, 123456.78, 123,456.78, $123,456.78).
- A variety of character symbols were used in place of missing values.

In each case, the programmer needed to identify the specific approach being used by the data provider and write code to convert each variable to a format to make it consistent with the other files.

The dollar variables presented additional problems. Not only did they need to be in a consistent format, but we also had to make sure the information in data fields was consistent across the different files. For instance, some data providers reported total indemnity paid up to some date while other data providers reported incurred data, which includes planned future payments. As the programmer processed the data, other staff members called the employers or TPAs to verify whether they sent us data on incurred amounts, paid amounts, and any other indemnity amounts, such as salary continuance. We must emphasize how helpful and cooperative the self-insured community was during this process, providing RAND with explanations and corrections as needed.

CHECKING DATA QUALITY AND CONSTRUCTING AN ANALYSIS FILE

The second task in this process was to examine the dollar variables in each of these files more closely. Data quality checks that are performed by the WCIRB, which provided the insured-employer data, needed to be repeated on the self-insured data. For instance, for every data field reported, are numbers present in the field? Are the numbers credible? Do paid amounts equal incurred amounts for closed claims?

Inconsistencies in data definitions across firms would not be surprising, but these inconsistencies needed to be identified to avoid misleading results. In addition, some of the data providers inevitably made mistakes when they created files to send to RAND, which is simply the nature of administrative data.

In total, we received data on 103,416 claims (all indemnity, and some medical-only) from 68 companies representing 80,229 persons. The analysis sample was to be limited to permanent

partial disability (PPD) claims, with matched wage records. The following steps were taken to reach the ultimate analysis sample:

- 248 accident records (claims) had improper Social Security numbers. These records were deleted.

- 2,248 accident claims were before 1991 or after 1996. Because they were outside of our study range, they were deleted.

- 21,704 accident claims had no indemnity paid or incurred (medical-only claims). These were deleted.

- 1,701 claims had no wage records. These were deleted.

- 394 claims had no wages prior to injury. These were deleted.

- 357 claims had no wages in quarter of injury or four quarters prior to injury. These were deleted.

- 88 claims have three-plus names in one quarter in the wage file.[1] These were deleted.

- 993 claims appeared to be duplicate or repeated because they were from the same employer and the same quarter. These were combined and the indemnity amounts added together.

- 44,401 accident records were not permanent partial disability. These were deleted.

- 137 accident records had no wages during the eight quarters prior to injury. These were deleted.

- 335 accident records did not match any employer account number. These were deleted.

- 30,774 accident claims remain in the analysis file.

We then decided to focus on second quarter 1991 through fourth quarter 1995 because of data problems with the first quarter of 1991 from the California Employment Development Department (EDD). We also dropped 1,449 subsequent claims by people who had made claims in early quarters.[2]

After dropping 1996 and first quarter 1991 claims as well as later claims, 23,171 observations remained. We then dropped 343 claims from workers with wages in the quarter of injury but for whom the self-insured employer was not the main (highest wage) employer, 696 claims with

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[1] These claims are likely to be from Social Security numbers that are in error and therefore match to more than one individual with wages reported by employers in California.

[2] Essentially, we assume that permanent disability claims for the same person are independent events. This is a strong assumption, but given data limitations (observing only later claims when employees were retained by their employer, observing only later claims within the time period 1991 through 1995, and not observing claims for either injured workers or controls at other employers), we adopted this choice. We also note that, in some cases, we suspected that subsequent claims were not new claims but rather corrections of old claims that were submitted without first deleting the old record (for instance, the total

indemnity that equaled zero, 55 claims with wages greater than $100,000 in one quarter or more, and 255 claims without controls. That left us with the final data set of 21,852 claims.

RESPONSE RATE

Table A-2 reports a regression using data on the characteristics of the population of self-insured firms from the State of California Self-Insured Plans. It was these data that were used to select the sample that was contacted. The regression examines the determinants of a positive response to our request for data. In other words, it investigates which characteristics lead to a greater probability that a firm would be one of the 68 firms that provided data.[3]

Table A-2

Response-Rate Regression for Construction of Weights

Variable	Parameter Estimate	Standard Error	Adjusted T-Stat
Intercept	0.744	1.416	0.526
Cases (in logs)	—0.060	0.027	—2.195
Cases (in logs) squared	—0.062	0.023	—2.687
Number of employees (in logs)	0.065	0.030	2.196
Number of employees (in logs) squared	0.063	0.028	2.273
Number of administrative changes	—0.095	0.085	—1.108
SIC 0 Agriculture, Forestry, and Fishing	0.051	0.287	0.179
SIC1 Mining and Construction	0.017	0.403	0.043
SIC 2 Manufacturing	0.166	0.145	1.143
SIC 3 Manufacturing	—0.089	0.142	—0.625
SIC 4 Transportation	—0.213	0.162	—1.309
SIC 4 Communication, Power, Water	0.722	0.140	5.151
SIC 6—7 Banks, Insurance, Hotels, Entertainment	—0.097	0.138	—0.706
SIC 8 Health Care Services	0.201	0.114	1.756
Self-administered	—0.312	0.096	—3.246
Combination administered	0.150	0.152	0.990
Southern California Headquarters	0.190	0.091	2.095
Outside California Headquarters	0.398	0.101	3.947
Payroll per employee (in thousands)	0.003	3.820	0.777
Total indemnity per employee (in thousands)	—0.009	3.629	—0.247

R-squared = 0.3449.
Omitted SIC 5 category: Retail, Wholesale Trade.

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benefit amounts were the same). As a cross-check, we estimated earnings losses on the sample without subsequent claims and found that earnings losses were the same.

[3] The regression is weighted by the inverse of the sampling probability for the firm (constructed from Table A-1). The standard errors are heteroskedasticity consistent.

CONSTRUCTION OF NONRESPONSE WEIGHTS

In Chapter 4, we report estimates that adjust the weight applied to a claim in the construction of averages in order to investigate the impact of nonresponse bias. This section describes the methodology used to construct the weights.

Using a logistic regression with the same specifications as shown in Table A-2, we obtained predicted probabilities of response (shown as phat), and combined them into five response probability bins:

Bin1: $0<=phat<0.17038$

Bin2: $0.17038<=phat<0.34091$

Bin3: $0.34091<=phat<0.55689$

Bin4: $0.55689<=phat<0.71718$

Bin5: $phat>=0.71718$

Within each bin, we calculated Wr = Sum (sampling weights for respondents) and Wnr = Sum (sampling weights for nonrespondents). We therefore defined the nonresponse weight as (Wr + Wnr)/Wnr. See Little and Rubin (1987).

NUMBER OF CONTROLS PER INJURED WORKER

Table A-3 reports the number of controls per injured worker at insured firms. Table A-4 reports the number of controls per injured worker for the self-insured sample. The large firms from which the self-insured sample was drawn allowed for a far higher probability of identifying controls for each injured worker.

Table A-3

Number of Controls per Injured Worker, Insured Firms, 1991 Through 1995

Number of Controls	Year of Injury				
	1991	1992	1993	1994	1995
1	1,515	1,291	1,736	2,010	673
2	1,201	1,162	1,399	1,504	586
3	1,070	999	1,309	1,364	458
4	847	796	1,148	1,091	388
5	617	674	844	922	267
6	496	467	639	683	205
7	313	314	439	478	130
8	153	191	254	267	74
9	80	93	118	129	35
10	29	23	51	55	9
Total	6,321	6,010	7,937	8,503	2,825

Table A-4

Number of Controls per Injured Worker, Self-Insured Firms, 1991 Through 1995

Number of Controls	Year of Injury				
	1991	1992	1993	1994	1995
1	30	70	64	74	81
2	34	88	89	92	75
3	43	76	79	96	80
4	55	112	98	81	70
5	3,875	4,376	4,056	4,182	3,876
Total	4,037	4,722	4,386	4,525	4,182

CONSTRUCTION OF TOTAL INDEMNITY FOR PERIODS OF LESS THAN TEN YEARS

When constructing replacement rates, most of the data received from the self-insured firms were incurred amounts (that is, the data included predicted future indemnity) reported at approximately five years. For replacement rates at three, four, and five years, we did not want to count indemnity not yet paid. Even with the paid data, we did not want to count the full amount of future indemnity included in settlements and instead elected to spread it out as though it were paid out according to the schedule. To do this, we simulated the stream of benefits using the WCIRB data to three, four, and five years.

For all individuals with benefits still being paid according to the simulation at three, four, and five years, we calculated the total benefits paid at that point. We then capped the total benefits in both the self-insured and the insured employer data at the average amount received in that time period by all of the injured employees still receiving benefits at the end of the period.

The simulation proceeded as follows: We assume that TTD benefits commence during the quarter of injury, followed by VRMA benefits. The WCIRB data do not report the duration of either temporary total benefits or vocational rehabilitation benefits. We calculate a weekly benefit for each type of benefit using the average weekly wage reported in the WCIRB data. We derive the number of weeks of benefits of temporary disability from the weekly benefit and the total temporary disability benefits incurred.

Similarly, we calculate the number of weeks of benefits of VRMA from the formula, together with the average weekly wage and total incurred VRMA reported for the claim. When both VRMA and TTD are exhausted, we assume that the payment of permanent partial disability benefits begins. We use the last observed WCIRB disability rating and the WCIRB average weekly wage to derive the weekly benefits paid and derive the number of weeks of benefits using the PPD benefit schedule, which relates the number of weeks to the disability rating.

For example, the maximum benefit amount for 1993 at three years is $29,242.32, and 26.6 percent of claims are capped at this amount. At four years, the maximum benefit amount is $38,046.23, and 19.9 percent of claims are capped. At five years, the maximum is $46,597.38, and 15.2 percent are capped. In other words, at three years, 26.6 percent will still be receiving benefits, and those people will have received an average of $29,242.32 over the previous three years. By the end of the fourth year, only 19.9 percent will still be receiving benefits, and those people will have received an average of $38,046 over the previous four years. An additional 4.7 percent exhaust their benefits during the fifth year, so that 15.2 percent are still receiving benefits by the end of five years. The average benefit amount paid to this group over the previous five years is $46,597.

TAX SIMULATION

We simulated income taxes given the earnings for every individual in the sample. However, we do not have all the information necessary, including marital status, number of dependents, nonlabor income, and other specifics, to actually calculate taxes. Therefore, we used the approach shown in Table A-5.

Table A-5

Average Tax Rates

Quarterly Wages ($)	Federal Tax Rate
0—2,500	0.031
2,500—5,000	0.080
5,000—7,500	0.136
7,500—10,000	0.169
10,000—18,750	0.212
18,750—25,000	0.231
25,000—50,000	0.236
50,000+	0.260

Quarterly Wages ($)	CA State Tax Rate
0—5,750	0.001
5,750—10,000	0.004
10,000—14,250	0.012
14,250—20,000	0.016
20,000—36,500	0.022
36,500—93,500	0.030
93,500+	0.047

From the Congressional Budget Office (1998), we obtained the information on the federal average income tax rates shown in Table A-5. This includes tax rates after all deductions,

and includes federal income taxes and social insurance taxes (Social Security, Medicare), which we converted to quarterly amounts. From Ettlinger et al. (1996), we obtained the California state average income tax information shown in the table, after deductions (and adjusted to account for the federal income tax deduction for California state taxes).

Because these data refer to household income (for income tax purposes), we also converted individual income into household income using the March 1996 Current Population Survey (CPS). Using data on the civilian adult population in California, age 16 to 65, we regressed total family income on individual income using a spline with five nodes, weighted by hours worked in the previous year to ensure that a working population is more heavily weighted in the regression. We then predicted family income from individual income. For each family income amount, we then used the tax information to estimate taxes paid, and this information is used to construct after-tax replacement rates.

Figure A-1 shows the average tax used in the calculations for every level of quarterly earnings. The line that begins higher up on the vertical axis illustrates the impact of adjusting tax rates to reflect the increased probability that lower-wage workers have other sources of income in their households. Using imputed family earnings to estimate tax rates represents the approach used in this report. The other line in the figure illustrates the tax rates that result from using the data in Table A-5.
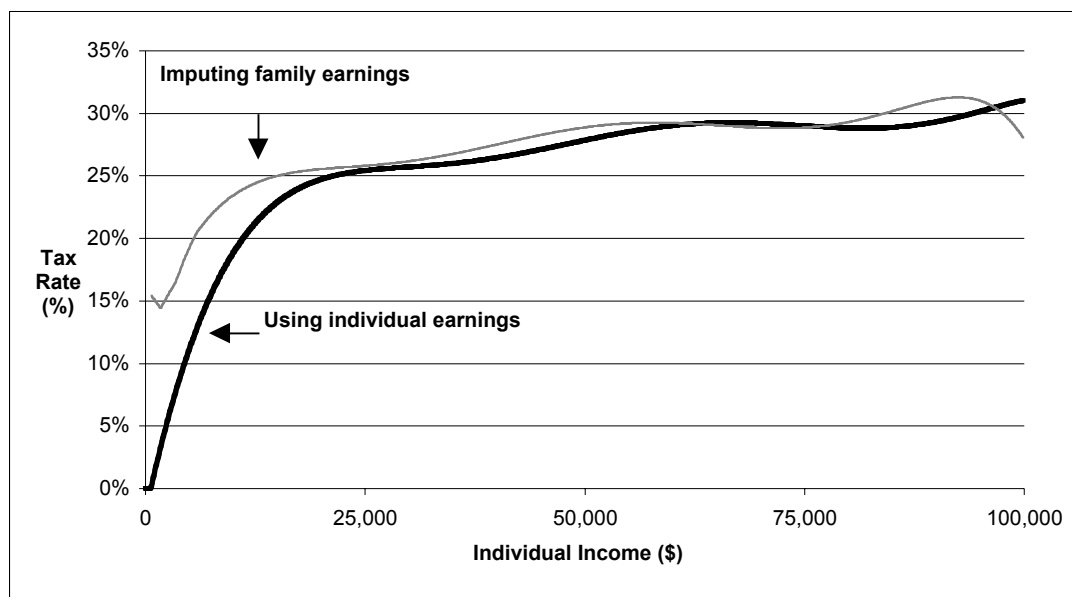

Figure A-1 Estimated Average Tax Rates

INDEMNITY QUINTILE AND PERMANENT DISABILITY RATING QUINTILE

For 1993 injuries, the correlation between disability ratings and total indemnity incurred in the WCIRB data was 0.68. In Table A-6, we report a cross-tabulation between quintiles of disability ratings and quintiles of total indemnity.

Table A-6 reports the relationship among indemnity quintiles in the insured firm data, used as a proxy for disability rating quintiles in Chapter 6. The cells in the table show the proportion of claims in each indemnity quintile (shown in the rows) that are also in each disability rating quintile (shown in the columns). For instance, the table shows that in 68 percent of the cases, a claim in the first quintile of indemnity also falls in the first quintile of disability ratings. In each row, the diagonal element is the largest proportion of cases, indicating the close relationship between these two measures.

Table A-6

Proportion of Claims in Each Indemnity Quintile by Permanent Disability Rating Quintiles, Insured Firms, 1993

Total Indemnity ($)	Disability Ratings				
	1—6	7—12	13—20	21—32	32+
1—3,558	(67.93)	(27.22)	(3.84)	(0.95)	(0.06)
3,559—8,255	(18.34)	(51.17)	(27.41)	(2.96)	(0.13)
8,256—17,352	(4.60)	(16.13)	(44.61)	(33.84)	(0.82)
17,353—33,792	(1.83)	(5.67)	(18.71)	(50.47)	(23.31)
33,792+	(0.25)	(1.26)	(4.16)	(18.64)	(75.69)

PROPORTIONAL WAGE LOSS REGRESSIONS

Using the claims database matched to the earnings database, we estimated regressions of individual proportional wage loss on variables for certain characteristics of the claim. The results are shown in Table A-7. Specifically, we regressed total individual (12-quarter) losses on potential uninjured earnings, and potential uninjured earnings interacted with all other variables in the regression. By having potential uninjured earnings interact with the other variables in the regression, we can interpret the effects shown in the table as being the effects of the variables on proportional wage loss. Table A-7 shows regression estimates for 1994 injuries at three years and estimates for 1993 through 1995 pooled injuries at three years.

In Column 1, the regression estimates only the proportional wage loss, with no controls. In Column 2, controls for the industry are added, and in Column 3, controls for the log pre-injury quarterly earnings and log of the number of employees are added.

For the 1994 estimates, inclusion of pre-injury earnings and the log of the number of employees renders the insured employer dummy variable insignificant. This result suggests that

the differences in proportional wage losses in 1994 between claimants working for insured and self-insured firms can be explained by pre-injury earnings and the number of employees at the firm.

Table A-7

Proportional Wage-Loss Regressions, Insured Firms, 1994 and Pooled 1993 Through 1995

Variable	1994 Injuries, 12 Quarters After Injury			1993—1995 Injuries, 12 Quarters After Injury		
	1	2	3	1	2	3
Potential uninjured earnings (Control s 3-year earnings)	0.211* (0.005)	0.358* (0.021)	0.604* (0.025)	0.210* (0.003)	0.342* (0.149)	0.567* (0.017)
Insured	0.111* (0.007)	0.048* (0.011)	0.006 (0.014)	0.133* (0.005)	0.084* (0.007)	0.051* (0.009)
Log pre-injury quarterly earnings			—0.120* (0.007)			—0.112* (0.004)
Log number of employees			—0.011* (0.003)			—0.009* (0.002)
Industry (SIC Code)						
Agriculture, Forestry, and Fishing (SIC-0)		0.045 (0.035)	0.029 (0.035)		0.023 (0.231)	0.001 (0.023)
Mining and Construction (SIC-1)		0.006 (0.330)	0.035 (0.187)		0.003 (0.013)	0.027* (0.012)
Manufacturing (SIC-2)		—0.047* (0.019)	—0.037 (0.019)		—0.065* (0.012)	—0.052* (0.012)
Manufacturing (SIC-3)		—0.105* (0.015)	—0.058* (0.016)		—0.111* (0.010)	—0.065* (0.010)
Transportation (SIC-4)		—0.029 (0.022)	0.002 (0.104)		—0.063* (0.013)	—0.027* (0.013)
Communication, Power, Water (SIC-4)		—0.124* (0.015)	—0.063* (0.015)		—0.118* (0.009)	—0.056* (0.009)
Financial, Hotels, Enter-tainment (SIC-6—7)		—0.041* (0.016)	—0.010 (0.016)		—0.043* (0.010)	—0.011 (0.011)
Health Care Services (SIC-8)		—0.033* (0.014)	0.001 (0.045)		—0.027* (0.009)	0.003 (0.009)
Location of At-Injury Employer						
San Francisco Bay Area		—0.077* (0.017)	—0.050* (0.017)		—0.059* (0.011)	—0.030* (0.011)
Southern California		—0.037* (0.016)	—0.024 (0.015)		—0.019 (0.011)	—0.004 (0.010)
Multiple locations		—0.054* (0.015)	—0.011 (0.017)		—0.027* (0.010)	0.014 (0.011)

Note: Dependent variable: Total 3-year losses. Regressions include dummy variables for quarter of injury. Omitted SIC category: retail and wholesale trade (SIC-5). All variables (except potential earnings) are multiplied by potential earnings to obtain impact of variable on proportional earnings loss. The 1994 regression has 12,824 observations. The 1993—1995 regression has 31,948 observations.
*Significant at the 5 percent level.

Table A-8

Proportional Wage-Loss Regressions, Insured Firms, 1993 and 1995

Variable	1993 Injuries, 12 Quarters After Injury			1995 Injuries, 12 Quarters After Injury		
	1A	2A	3A	1B	2B	3B
Potential uninjured earnings (Control s 3-year earnings)	0.215* (0.05)	0.296* (0.021)	0.463* (0.026)	0.191* (0.005)	0.317* (0.032)	0.577* (0.037)
Insured	0.144* (0.007)	0.115* (0.011)	0.093 (0.013)	0.144* (0.011)	0.103* (0.154)	0.057* (0.021)
Log pre-injury quarterly earnings			—0.084* (0.007)			—0.137* (0.010)
Log number of employees			—0.006* (0.003)			—0.014* (0.005)
Industry (SIC Code)						
Agriculture, Forestry, and Fishing (SIC-0)		0.057 (0.035)	0.032 (0.035)		—0.115 (0.062)	—0.136 (0.061)
Mining and Construction (SIC-1)		—0.074* (0.028)	—0.030* (0.028)		0.003 (0.032)	0.027* (0.032)
Manufacturing (SIC-2)		—0.032 (0.028)	—0.005 (0.028)		—0.124* (0.031)	—0.092* (0.030)
Manufacturing (SIC-3)		—0.014 (0.027)	0.048 (0.028)		—0.165* (0.021)	—0.090* (0.022)
Transportation (SIC-4)		—0.091* (0.197)	—0.061 (0.020)		—0.043* (0.031)	0.003* (0.031)
Communication, Power, Water (SIC-4)		—0.083* (0.015)	—0.038* (0.016)		—0.154* (0.019)	—0.063* (0.020)
Financial, Hotels, Enter-tainment (SIC-6—7)		—0.050* (0.163)	—0.028 (0.017)		—0.032* (0.024)	0.019 (0.024)
Health Care Services (SIC-8)		—0.024* (0.015)	—0.006 (0.015)		—0.026* (0.020)	0.017 (0.020)
Location of At-Injury Employer						
San Francisco Bay Area		—0.031* (0.017)	—0.007* (0.017)			
Southern California		0.006* (0.016)	0.018 (0.016)			
Multiple locations		—0.008* (0.016)	0.023 (0.017)			

Note: Dependent variable: Total 3-year losses. Regressions include dummy variables for quarter of injury. Omitted SIC category: retail and wholesale trade (SIC-5). All variables (except potential earnings) are multiplied by potential earnings to obtain impact of variable on proportional earnings loss. The 1994 regression has 12,824 observations, and the 1995 regression has 6,942 observations.

*Significant at the 5 percent level.

For the 1993 through 1995 pooled claimants, the insured employer variable remains significant and positive but falls by more than one-half as the other variables are added to the

regression. This estimate implies that proportional wage losses are higher at insured firms, even after controlling for industry, pre-injury earnings, number of employees, and the geographic area of the state where the at-injury employer is located. Table A-8 reports the results for 1993 and 1995 using the same regression specifications shown in Table A-7.

APPENDIX B

RESPONSES FROM WORKERS COMPENSATION STAKEHOLDERS ON REPORT FINDINGS

The following pages contain reproductions of letters written by workers compensation stakeholders in response to a draft of this report. These responses were requested by the California Commission on Health and Safety and Workers Compensation in order to encourage stakeholder participation in the work of the Commission and to ensure that stakeholders perspectives are recognized during RAND s research process.

The letter requesting comments from stakeholders is included first in this appendix. The following four letters constitute the complete set of written responses to this request. They are organized alphabetically by the organization name.

STATE OF CALIFORNIA   GRAY DAVIS, *Governor*

DEPARTMENT OF INDUSTRIAL RELATIONS
COMMISSION ON HEALTH AND SAFETY
AND WORKERS' COMPENSATION
455 Golden Gate Avenue, 10th Floor
San Francisco, CA 94102
Telephone (415) 703-4220
Fax: (415) 703-4234

By Facsimile Transmission (Revised)

DATE: June 7, 2000

TO: CHSWC Permanent Disability Stakeholders Subgroup

FROM: Christine Baker, CHSWC Executive Officer

RE: Draft Report: PD Earnings Losses at Self-Insured Private Employers in California

A draft report on earnings losses from permanent disability at self-insured private employers was commissioned from Rand by CHSWC in response to stakeholder input. This draft report will be sent directly to you from Rand via overnight delivery.

The Commission wants to continue to encourage maximum stakeholder participation in the permanent disability project and therefore are providing you with an advance copy of the report while it is under technical review. We would like to encourage you to review the document and invite you to present comments on the policy implications at the CHSWC meeting in Los Angeles on June 29. In addition, if you are also willing to provide written comments, RAND has agreed to include your policy comments (1-2 pages) in the final document.

We encourage you to contact RAND with any technical questions or comments before the meeting. RAND will consider these technical comments in its final revision. You may contact Dr. Robert Reville, the principal investigator, directly at (310) 393-0411, x6786, or by email at reville@rand.org.

Please respond with your intentions regarding presentation to me by June 16. If possible, we would also like to see a draft of your written comments before the meeting.

CHSWC is committed to ensuring that its research is of the highest quality, and your input critical to this goal. Thank you in advance for your assistance with the review and policy interpretation of the new RAND findings. We hope that you find it helpful.

cc: Commission members
      Stephen J. Smith, DIR Director
      Suzanne Marria, DIR Assistant Director

CALIFORNIA APPLICANTS' ATTORNEYS ASSOCIATION

June 27, 2000

Tom Rankin, Chairman
Commission on Health & Safety & Workers' Compensation
455 Golden Gate Avenue, 10th Floor
San Francisco, CA 94102

RE: Draft RAND study on "Earnings Loss from a Permanently Disabling Injury and Replacement from Workers' Compensation at Private Self-Insured Employers

Dear Commissioner Rankin,

The California Applicants' Attorneys Association appreciates the opportunity to comment on the draft RAND study of earnings losses and benefit replacement at self-insured employers. This study confirms the groundbreaking finding of the original RAND study — that _all_ disabled workers experience "significant and sustained earnings losses," that current benefit levels replace only a small fraction of those earnings losses, and that workers with low rated disabilities receive the lowest replacement rates.

This second study is important because employers contended that the original RAND results were tainted inasmuch as they included only insured employers. The self-insured employers insisted that their workers would not show the same earnings losses or similar low benefit replacement rates.

In fact, although the data indicates that *initial* (but not long term) return to work patterns are better at self-insured employers, RAND found that earnings losses at self-insured employers were *higher*, and the replacement of these earnings losses by workers' compensation benefits was "no better than at insured employers."

Actually, the 10-year after-tax replacement rates for self-insured employers in this study are noticeably *lower* than replacement rates at insured employers. And these self-insurer replacement rates are overstated because this was not a representative sample; a balanced sample of self-insured employers would show even *lower* replacement rates.

In fact, the evidence shows that all of RAND's estimates of earnings losses are understated, and replacement rates are overstated. This study confirmed another of RAND's original findings; that disabled workers continue to experience earnings losses years after their injury, and not just in the higher rated disabilities, but in *all* disabilities. There is no indication that disabled workers ever overcome this earnings gap, so it is probable that lifetime earnings losses will be far higher, and replacement rates far lower, than the 10-year estimates made by RAND.

The bottom line is that this new study provides further proof that current statutory benefit levels in California are grossly inadequate. CAAA urges that, after review of this material, the Commission renew its call for an immediate increase in benefit levels as justified by *both* RAND earnings loss studies.

Problems in Assessing Benefit Adequacy Among Groups of Workers

As noted, the most important finding of this study of self-insurer data is that it fully confirms that disabled workers experience "significant and sustained earnings losses." However, a loss of earnings is only one component of disability. Certainly the major earnings loss detailed in this study, an average 10-year earnings loss of $50,000, represents an extremely important consequence to the worker, but it is still just one of many major components that together make up disability.

Disabled workers suffer other financial losses, such as the loss of benefits, additional expenses caused by the disability, loss of spousal income, out-of-pocket medical costs, etc. There also are personal loss, necessary changes in the worker's lifestyle, and a degradation in the quality of life, perhaps even an inability to perform basic functions of life, that also is a part of the disability matrix.

Unfortunately, RAND has continued to use earnings loss *by itself* as a quantitative measure of disability. This position has led some in the business community to contend that any worker who returns to work following a disabling injury should be ineligible for permanent disability benefits. This contention callously ignores the many other consequences of disability experienced by this worker. It is clearly ludicrous, for example, to contend that a worker who has several fingers amputated in a workplace accident should be denied a disability rating simply because he is able to return to work following a period of temporary disability.

Because earnings loss is only one component of disability, RAND's emphasis on uncompensated earnings loss is likewise incorrect. Drawing any conclusions regarding benefit adequacy for particular groups of workers, based solely on a quantitative measure of earnings loss and uncompensated earnings is improper and produces highly illogical findings. A couple of examples illustrate the problems caused by RAND's approach:

- A company president and a mail room clerk suffer identical injuries when a shelving system collapses. Neither returns to work within five years, during which the president's earnings loss is $1,000,000, while the clerk's is $100,000.

    If the level of disability is evaluated solely by earnings loss, as suggested by RAND, the president has ten times the disability of the clerk. But with identical injuries, both receive a rating of 75% with an award of $108,445.

    Evaluating benefit adequacy solely on the basis of uncompensated earnings, the president's benefits are grossly inadequate because there is almost $900,000 in uncompensated earnings, while the clerk's benefits appear excessive because they are in excess of the earnings loss.

- A company president and a mail room clerk are both injured when a shelving system collapses. The president suffers a moderate impairment of the spine but is able to return to work after surgery and rehabilitation, missing one year of work and losing $100,000 in earnings. The clerk is severely injured, cannot work during the next five years, and loses $100,000 in earnings over that period.

    Evaluating the level of disability solely on earnings loss, the two have equivalent disability. But the president receives a rating of 50%, award of $45,262.50, the clerk receives a 75% rating, award of $108,445.

    Evaluating benefit adequacy solely on the basis of uncompensated earnings, again the clerk's benefits appear excessive because the benefits exceed earnings losses, while the president's benefits appear inadequate with nearly $55,000 in uncompensated earnings.

These examples show that earnings losses cannot be used as a quantitative measure of disability; nor do uncompensated earnings for different workers accurately describe adequacy. The absolute level of earnings loss and the amount of uncompensated loss both deserve careful study in the Commission's continuing evaluation of how to reduce uncompensated earnings loss. But RAND's conclusions regarding benefit adequacy among different groups of workers based solely on differences in their earnings losses and uncompensated earnings have no validity.

Furthermore, both of these measures unfairly discriminates against low paid workers. Except for the lower earnings loss, these workers experience all of the same consequences of disability as their higher-paid counterparts. Furthermore, having a lower earnings loss or a lower uncompensated earnings total doesn't mean that the consequences for the worker are less damaging.

RAND's reasoning assumes that the consequences of earnings loss and/or uncompensated earnings vary directly with the amount; this simply is not true. In fact, the consequences of a lower overall earnings loss for a low paid worker can be significantly more devastating than a higher overall earnings loss for a high paid worker.

For a low paid worker with a family, all earnings go toward the necessities of life — housing, food, clothing, health care (since many, if not most, low paid workers don't have employer-sponsored health insurance). Many low paid workers have little or no savings to cushion them in case of an earnings loss. For these workers, losing even a fraction of their earnings can result in serious consequences; losing a car, foreclosure of a house, foregoing medical treatment, etc. In fact, RAND's studies show that five year earnings losses for the lowest paid workers — even for "low-rated claims"— range between $8,439 (insured) and $17,872 (self-insured), amounts that definitely constitute a major hardship.

For these lower paid workers, losing even a small percentage of earnings has major consequences. Consequently, for these workers the key measure of how they are affected financially is not found in examining the amount of uncompensated earnings, but in looking instead at the <u>replacement rate</u> (the percentage of earnings losses replaced by workers' compensation benefits). Alarmingly, the data in this study confirm the findings of the original study; that the replacement rate is *lowest* for low rated disabilities. This clearly demonstrates the need to significantly adjust the benefit levels for these ratings, benefits that have remained unchanged for over 20 years!

<u>Other Issues</u>

▸ RAND also relies solely upon earnings losses to judge the equity of the permanent disability rating schedule ("ratings are considered valid if higher ratings are associated with higher losses"). Again this sole reliance on earnings losses, to the exclusion of all other consequences of disability, presents major problems. It also ignores the fact that different occupations have radically different salary schedules.

Farm workers who suffer a similar injury to a skilled carpenter will have vastly different earnings losses, yet in all other aspects will experience the same consequences. Concluding that disability ratings are "invalid" only because they do not exactly correlate with earnings losses is clearly improper.

- ▸ RAND calculated after-tax earnings loss and benefit replacement figures using average tax rates for all workers. These after-tax estimates are considerably lower than the gross figures. However, the effect of receiving tax-free benefits varies considerably depending upon pre-injury earnings and number of dependents.

  Because lower income workers with a family may pay little or no income tax, the average after-tax estimates made by RAND may not be applicable to these workers.

- ▸ RAND notes that the "proportional losses" — the portion of potential earnings lost due to the disability — declined during the 1990's (although it is still very significant, ranging from almost 25% for self-insured employers to 31% for insured employers). This reduction apparently shows that the current economic boom in California has reduced earnings losses.

  While this is certainly good news for disabled workers, there is a flip side to this finding — that disabled workers can expect to experience disproportionately high earnings losses during economic downturns. This finding confirms that the maxim "last hired, first fired" applies to disabled workers.
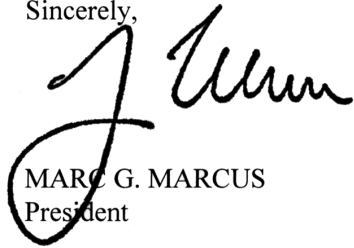
  Further, it demonstrates that the ongoing study of how to improve return to work for disabled workers must have a long-term focus. Adopting measures that look only at short-term return to work, such as the 12 month duration required for modified or alternative work under Labor Code §4644(a), clearly fails to provide meaningful protection for disabled workers who are most at risk during economic downturns, mergers, company downsizing, and other similar situations.

In summary, CAAA believes that this new examination of injured workers' earnings losses at self-insured employers provides valuable corroboration of the findings of the original RAND study of such losses at insured employers. Despite employers' assertions to the contrary, this second study documents and confirms that:

- • the "conventional wisdom" which underlay the last several statutory benefit changes is wrong. (That "wisdom" holds that only the most severely disabled workers experience significant earnings loss);

- • *all* disabled workers experience significant earnings losses;

- • workers' compensation benefits replace only a small fraction of those losses; and

- • workers with low rated disabilities receive the least adequate benefits.

Although CAAA looks forward to working with the Commission in further evaluation of this new information, we believe that the most important consequence of this study is reconfirmation of the urgent need to significantly and immediately increase workers' compensation benefits.

Sincerely,

MARC G. MARCUS
President

CALIFORNIANS *FOR* COMPENSATION REFORM

ER

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June 27, 2000

Christine Baker
Executive Officer
Commission on Health and Safety and Workers' Compensation
455 Golden Gate Avenue, 10th Floor
San Francisco, CA 94102

Dear Ms. Baker:

On behalf of the Board of Directors and its Policy Advisory Committee of Californians for Compensation Reform, thank you for providing the opportunity for CCR to comment on The RAND Corporation's draft recommendations entitled: *"Earnings Loss from a Permanently Disabling Injury and Replacement from Workers' Compensation at Private Self-Insured Employers"* as submitted to the Commission on Health and Safety and Workers' Compensation.

First, CCR greatly applauds the Commission and The RAND Corporation for its leadership in studying and developing recommendations to make systemic improvements to California's permanent disability system. As you know, CCR has shared the Commission's enthusiasm and interest in launching this major study and continue to be an active player on the Commission's Permanent Disability Policy Advisory Committee.

After reviewing the RAND June 2000 draft, we agree that the RAND results to date have reinforced our position and that of the entire employer community, that the permanent disability system in California is inequitable, inconsistent and overly litigious. CCR has produced data over the years that consistently demonstrate the system is in dire need of revision. For example, the RAND study confirms that the fraction of indemnity claims with permanent disability (over 40%) is higher than almost any other state. Furthermore, the cost of permanent disability (which drives much of the cost of workers' compensation in California) is one of the highest in the country. The litigation associated with workers' compensation is largely driven by disputes over permanent disability and is among the highest in the country.

More importantly, the lack of an objective permanent disability rating tool encourages litigation and fraud. In addition to these established facts, RAND also reveals that despite the litigation, fraud and costs, the injured workers have high wage losses and workers' compensation benefits do not replace a large fraction of those losses.

CCR strongly supports reducing uncompensated wage loss. CCR also supports the development of incentives to encourage sustained and prompt return to work.

Furthermore, CCR supports incorporating the use of objective medical findings in the diagnosis of impairment that can be compensated without litigation and delay.

The RAND results show that low-wage workers with permanent disabilities are well-compensated after their injury. This means that the system provides a social safety net, compensating the losses of low wage workers. Workers with higher wages must supplement workers' compensation with other sources of insurance. As it stands, high wage workers are more likely to have long-term and short-term disability policies. RAND does not count the income received from these policies in their estimates of wage replacement.

CCR agrees with The RAND study that identifies better ways to address low-rated claims such as the development of better return-to-work incentives.

At the same time, smaller employers who are insured need help returning workers to their job due to the usual expense incurred in job modifications and accommodations. In the current system, employers who pay for accommodating disabled workers still have to pay for permanent disability. If we want to deal with the problem of lower return to work among low-rated claims, workers' compensation benefits should not be increased.

Increasing the benefits will only ensure that more lawyers will encourage more injured workers to spend more time out of work to increase their permanent disability rating. Instead, allow employers to use the money to bring the workers back to work. Both the workers and the employers will gain from a policy like this.

We believe that a more consistent system will encourage return to work, reduce litigation and reduce wage loss at the same time, ultimately providing a cost savings to employers. The RAND Corporation is still studying these issues and will be releasing the results of these studies next year. We should wait until the RAND study is complete to take action on making any revisions to California's workers' compensation system. We should not arbitrarily increase benefits based on partial results.

Thank you once again for giving CCR the opportunity to respond to The RAND study on permanent disability. If you have any questions, please contact me at (916) 441-4111.

Sincerely,

LORI C. KAMMERER
Managing Director
Californians for Compensation Reform

cc: CCR Board of Directors
        CCR Policy Advisory Committee

California Labor Federation, AFL-CIO

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ART PULASKI
Executive Secretary-Treasurer

TOM RANKIN
President

June 21, 2000

Ms. Christine Baker, Executive Officer
Commission on Health and Safety and Workers' Compensation
455 Golden Gate Avenue, 10th Floor
San Francisco, CA 94102

Dear Ms. Baker:

As President of the California Labor Federation, AFL-CIO, I would like to emphasize how the latest findings from the Commission's study of permanent disability clearly point out the vast discrepancies between the goal and the reality of workers' compensation benefits in California.

California's Constitution requires our workers' compensation system to make "adequate provisions for the comfort, health and safety and general welfare of any and all workers and those dependant upon them for support to the extent of relieving from the consequences of any injury or death incurred or sustained by workers in the course of their employment." In stark contrast to this requirement, this independent research by the RAND organization demonstrates that all industrially injured workers, whether working at private insured or self-insured employers, sustain significant uncompensated earnings losses.

The research also shows that workers of self-insured employers have a better return to work outcome. There is no better outcome for injured workers than to retain their previous jobs at their previous earnings. Besides avoiding earnings losses, loss of fringe benefits and disruptions to their family, this allows them to proceed with their careers and retain their dignity and self-worth. For this reason, we commend the self-insured for their efforts returning injured workers to the job. All firms should be encouraged to duplicate their efforts, and this will go part of the way to solving the problem.

At the same time, it is apparent that return to work is not enough. Benefits must be raised. Even at the best firms in California, wage replacement rates are unacceptably low. Some injured workers, even after benefits, are losing tens of thousands of dollars over the years after the injury, not to mention the loss of fringe benefits and the uncompensated personal losses they suffer in their daily lives due to their injuries. This should not be allowed to continue, and we cannot delay addressing it.

Benefit maximums should be raised or eliminated, for both temporary disability and permanent disability. This will increase benefits for the higher income workers that RAND found suffered the largest losses. In addition, permanent disability benefits should be raised for low-rated claims. While the wage losses are not as large as the high-rated claims, it is outrageous that a worker would only receive benefits equal to one-tenth of his or her wage loss. When looking at benefit levels we must also always bear in mind the other losses frequently suffered by injured workers: fringe benefits, seniority rights and the impairment of their ability to perform everyday activities at home.

The study findings are clear on the desperate need for a benefit increase. Now is the time for action!

Sincerely,

Tom Rankin
President
TR: sm
Ope 3 afl cio (31)

CWCI

California Workers' Compensation Institute

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July 17, 2000

Robert Reville, Director of Research
RAND Institute for Civil Justice
1700 Main Street
PO Box 2138
Santa Monica, CA 90407-2138

Dear Bob:

Thank you for the opportunity to review the draft monograph on earnings losses at the self-insured. The data, the analysis and the results of your study are a significant contribution to our understanding about the impact of employer characteristics on the adequacy and equity of indemnity benefits and the factors that facilitate injured workers returning to gainful employment in California.

As you may recall, the Commission appointed the Permanent Disability Advisory Committee to advise them on the findings and results of the RAND research and to recommend changes to the current system for rating permanent disabilities that would be indicated by such research. The Advisory Committee at their initial meeting established that the objective of the committee in reviewing the research, was to find ways to reduce uncompensated wage loss suffered by injured workers. Given that the public policy objective is to reduce uncompensated wage loss, it is very apparent that the report documents that injured workers with high pre-injury earnings and the most serious disabilities fare the worst in the current system. As the report points out "Whether the outcome for this group is measured by replacement rate or by uncompensated losses, the results seem least adequate." This finding is also consistent with the testimony provided by injured workers at recent legislative hearings. They were all seriously injured, had high pre-injury earnings and suffered extreme financial hardship as a result of their injury. I think this is the report's most significant finding and should be unambiguously stated as such in the beginning of the report.

Your report looks at the effects of injury on the earnings of injured workers five years after injury – an appropriate time interval necessary to assess the more long-term impacts. That requires the data to be aged and the analysis is forced to rely on results observed from injuries occurring during 1993. Unfortunately, there has been significant intervening events that need to be considered before policymakers can use the results of the analysis for decisions regarding benefit or schedule changes. For example, the legislature increased benefits in 1993, phasing them in from 1994 thru 1996. The

Robert Reville
July 17, 2000
Page Two

maximum weekly temporary disability payment increased from $336 in 1993 to $490 after July 1, 1996 – a 45 percent increase. The report also points out that total losses and proportional wage losses have been declining in California over the '90s (p.32). I think your results should be updated and incorporate these and other changes by building a simulation model to update the calculations on uncompensated wage losses and replacement rates. This same model could then also be used to simulate the effect of proposed benefit changes to better understand to what degree they improve adequacy and equity for injured workers. I don't think construction of such a model would be unduly difficult and it would aid policy makers tremendously.

As I understand the data, approximately 99 percent of the injured workers return to work, but many suffer wage loss subsequent to this initial return to work. In California, employers that offer modified or alternative work are required to offer it for a period of one year. It would be helpful to know what the uncompensated wage loss and replacement rates are for injured workers that return to work and remain there for a period of one year. What if it was assumed that all wage loss after the one year was assumed not to be due to injury, which is the implicit assumption in current law?

Thank you once again for the opportunity to comment on your draft report. The issues raised above address just some of the more salient results of your study. Your research has significant implications in a number of additional areas that I will look forward to discussing with you. We will also look forward to presenting a more detailed policy response to issues and results raised in your report at the Commission meeting.

Sincerely,

Edward C. Woodward
President

ECW/wd

cc: Christine Baker, CHSWC

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